

LANCASHIRE VERSUS CORNISH ENGINES.

THE COLLIERS' GRIEVANCES.

As to employing more Inspectors, it amounts to this—Are the Inspectors to have the supervision of collieries, or the management of them? At present they have the supervision only, and the gentlemen at present in office are sufficiently numerous for the duties to be performed, and certainly perform those duties efficiently. If they are to manage the collieries, they would have to be nearly as numerous as viewers are at present; and, although probably the coalowners would suffer most from the diminution of their profits, I opine that it is probable that here, as in Belgium, a system of working would be introduced which would lessen the wages of the men, although they might be paid the same price per ton, or per tub, as at present.

AN UNDELEGATED COLLIER.

ALLOYS OF MANGANESE.

Cheltenham, July 18.

GEOLOGY OF NORTHERN PORTUGAL—No. II.

point close to where they come out to the sea to the north and to the bank of the Douro. To the south there is a strong system of antimony and gold veins, which have been worked upon at Valongo, and again close to the river Douro, and in some places the antimony is rich in gold and silver. The celebrated old Roman gold works, close to the town of Valongo, have left many evidences, in levels, galleries, and excavations, unmistakably Roman, but lately nothing has been done here, excepting some dilatory explorations for antimony. Auriferous quartz is in great abundance in this belt, which I propose to speak of in my next, before proceeding any further eastward.

JOHN CALVERT, C.E.

Copper Hill, Stickelmath, July 19.

MINING IN PORTUGAL--OPORTO MINING COMPANY.

Upon the points in Mr. King's report disputed by Mr. Calvert, who had opportunities of examining the mine whilst he was in the company's service, the directors offer no observation at present.

PETROLEUM.—WHAT IS IT?

That sound philosophical investigations may often throw a clearer perception on many things there can be no doubt, more particularly when such enquiries are confined to effects, and not to those causes over which the Supreme Creator controls, so as to make out that Providence is but haphazard, as the instant men start hypotheses to annul the

That even pious Job knew of the existence of both rock oil and coal the Bible testifies, but whether that old philosopher knew their respective natures and origin better than modern savans is a question not very easily answered.

MINING IN MAIDEN GROUND.

Dalston, N.E., July 19. —

CARYSFORT MINING COMPANY (IRELAND).

CAST-STEEL.—Prof. Fleury, of New York, says—"The manufacture of cast-steel in large masses is of recent date. It is said that Mr. Kelley of this country, having established his claim for priority of invention of the so-called Bessemer process, now called the "Pneumatic" (this is the process, is prosecuting all who work under the Bessemer patent. To Bessemer, however, and to his untiring perseverance the most credit is due for the successful introduction of the pneumatic process in Europe, and had it not been for Mr. Kelley or any other claimant of this important improvement, we likely have been obliged to wait many years before it would have found its introduction into this country.

DIAMONDS.—Prof. Goepfert's long-expected prize essay "On the Colourable Nature of Diamonds" has recently been published, illustrating the various coloured plates. Experiments show that diamonds cannot be produced by Plutonic agency, as they become black when subjected to a high temperature. That they are, on the contrary, of a Neptunian origin, and were at first soft condition, is proved not only by the impressions of grains of sand and crystals of quartz, but also by the enclosures of certain fossiliferous rocks, and other strata, germinating fungi, and even vegetable structure found in diamonds. If Prof. Goepfert's conclusions be accepted, *diamonds* seem to be the final product of the action of heat and pressure. *Edinburgh Athenaeum.*

A valuable service of plate has been presented to Mr. J. D. Carr, now manager of the Metropolitan and Provincial Bank, by the citizens of Cork.

HOLLOWAY'S OINTMENT AND PILLS—UNERRING PRECISION.—The health is breaking down from the continuance of some weakening discharge, the pillars are breaking down, then is the time to try the potency of Holloway's healing pills, and purifying pills. No treatment for giving ease and safely leading to a cure compared to this. This ointment cleans and cools the foot, and the growth of poison, and the inflammation, reduces the swelling, prevents the growth of poison, and spares both pain and danger. Thousands testify to their own personal cure to the unvarying success attending the use of Holloway's preparations in all ulcerated legs, enlarged veins, scurvy skin, and swollen ankles.

Mr. Goldsmid, who was one of the dissentients, had sold 150 out of the 250 shares which had been allotted to him at 2 1/4 prem.

The CHAIRMAN said that some of the shareholders were strongly of opinion that the property should not be given up until it had been further explored.—Mr. SHARP said that all that Mr. Paxton knew about the mines which the company purchased was obtained from Mr. Finkle, and upon whose statements he (Mr. Sharp) induced a great number of shareholders to subscribe to the company. Mr. Finkle was a man who knew no more about the property than any of the shareholders. Mr. Finkle came from Australia to this country, to make arrangements for the sale of the property, he brought with him a number of certificates from the Colonial Government.

A SHAREHOLDER: Could the company fix Mr. Paxton with fraud?—Mr. SHARP thought not.—Mr. PEARL said he believed the directors entered into the matter, believing it to be *bona fide*, but they had been deceived.—Mr. SHARP said that, practically speaking, the directors were not responsible.

WALLES.					
Australian Ore.....	170	£ 1,080	17	6	42 7 0
Ballycummaik.....	234	2,122	16	0	9 15 0
Berehaven.....	5382	47,079	8	0	1 7 6
Burnt Ore.....	691	5,917	6	0	22 16 0
British Regulus.....	262	2,698	19	6	14 0 0
California Ore.....	264	8,486	13	0	23 11 6
Cape Ore.....	3283	35,309	17	0	28 5 6
Cape Copper.....	175	1,448	13	0	9 11 0
Cassil.....	166	1,611	4	0	18 12 0
Chill.....	1148	21,338	9	0	6 7 6
Colbing.....	164	1,944	6	0	11 6 6
Cobre.....	3870	45,003	7	0	18 5 0
Concordia.....	488	7,411	6	0	8 5 0
Concorree Ore.....	266	1,498	19	0	8 5 0
Copper Slag.....	266	904	8	0	14 9 6
Cop.....	3828	38,061	12	6	

BRITISH MINES.

Sanders, July 15: The



LONDON GENERAL OMNIBUS COMPANY.—The traffic receipts for the week ending July 16 was 13,760*l.* 3*s.* 6*d.*

either of the bargains since our last report. The engine-shaft will be down the required depth for a 48 ft. level by the end of next week. We shall sample on Saturday next about 20 tons of lead.

EAST PROVIDENCE.—T. Uren, W. White, July 20: In Boorman's shaft, sinking below the 70, the lode is worth 61. per fm. In the 70, east from Boorman's, the lode is yielding a little tin, but not to value. The 60, east from Boorman's, has improved, now worth 101. per fm. In the 60, east from the 60, east of junction, the lode is worth 61. per fm. In the 60, north-east on the counter, the lode is worth 61. per fm. In the 60, east from the 60, east of junction, the lode is worth 61. per fm.

EAST ROSEWARNE.—J. James, July 20: In the 85, east of Hallett's shaft, the lode is improved; it is now 1 ft. wide, and worth 121. per fm. In the 85 west the lode is 8 in. wide, producing stones of ore, with a promising appearance; the ground is better for driving, and we are getting near the dip of the ore ground from the 75 ft. level. In the winze sinking below the 75 ft. level, west of Hallett's shaft, the lode has made a splice or squeeze, but seems to be opening out again; it is at present about 9 in. wide, worth 141. per fm. In King's shaft, sinking below the 75, the lode is 1 ft. wide, worth 141. per fm. In the 75, east of King's, the lode is 18 in. wide, producing stones of ore. In the 75 ft. level, west of King's, the lode is 1 ft. wide, worth 121. per fm., and promising improvement. The stope is much as reported last week.

EAST ST. JUST UNITED.—John Cartwright, William Williams: Saturday was our setting and pay-day in three mines, which went off very satisfactorily. Our pump-men are engaged fixing clatters, ladders, pumps, and rods in the engine-shaft. All our underground work is going on well. The masons are building the boiler-house, and the engineers are going on well with their work.

EAST TREKERRY.—R. Kneeky, July 19: The 30 east end is improving for tin, worth 51. per fathom; the ground continues favourable for driving, and good progress has been made. In the 30 west, on the north lode, the water has increased; the lode is small, and in two parts, being disordered. The pitches are improving; there are seven, being worked by the men.

EAST WHEAL FLORENCE.—Wm. Verran, July 19: The engine-shaft is down between 4 and 5 fathoms below the shallow adit, and is being sunk in a most congenial stratum by the side of the lode; we intend pushing this point with all possible speed to the depth of the deep adit, which will be considerably over 30 fathoms below the surface, at which depth we intend to cross-cut the lode, and from appearances at the shallow adit we may fairly hope for something good, and more especially as we have such a fine lode in the deep adit, which is being driven in this direction from the western part of the set, which is producing not only fine stones but fine rocks of ore, of superior quality, a sample of which was analysed by Mr. Jenkins, of Callington, produced 151. per cent. of fine copper. There can scarcely be a doubt of this mine proving a most valuable property.

EAST WHEAL GRENVILLE.—G. R. Odgers, Wm. Bennett, July 19: The lode in the 85 east is small. The lode in the 85 west is 18 in. wide, and producing good yellow ore—a most promising lode, and looking much better than it did in the level above, over this place. The lode in the 75 east is small, but producing a little tin. The ground in the 75 cross-cut north is very favourable indeed for driving. The lode in the 75 west is 15 in. wide, and this morning we have cut a large stream of water, hence we calculate on a change for the better shortly. The lode in the 65 east is small, but producing 251. per fathom. The lode in the 65 west is 101. per fm. The stope below the 65 west is worth 101. per fm. The stope above the 65 west is worth 61. per fathom. We have this morning sampled (computed) 137 tons of copper ore, and are hoping to have a good sale of tin.

EAST WHEAL LOVELL.—R. Quentrell, July 19: North Lode: We are driving west of new shaft below the 40; the lode is worth 501. per fm. In the stope above the 40, east of diagonal shaft, we have intersected a slide, and at the 26.—South Lode: We are stopping above the 40; the lode is worth 601. per fm.; this appears to be a fine piece of tin ground. The Turnpike and middle lodes continue to produce a little tin. We intend to sail 11 tons of tin tomorrow.

EAST WHEAL RUSSELL.—John Goldsworthy, July 19: Homersham's Shaft: The lode in the 140 east is 2 1/2 ft. wide, composed of quartz, pryan, mundle, and stones of copper ore—ground easy for progress. In the 130, west of Roper's cross-cut, the driving being continued on the south side of the north lode is in favourable ground; good progress is being made. In the 130 east the driving being continued on the south part of the north lode is in favourable ground; good progress is being made. In the 130 east, on the main part of the lode, the driving has been suspended for a short time, to admit of a rise being put up in the back; the lode in the rise is worth 201. to 251. per fathom. The lode in the winze sinking below the 120 is producing saving work, and promising further improvement. The lode in the 120, west of Northey's cross-cut, the lode is 4 ft. wide, producing saving work. In the winze sinking below the 66 the sinking is being continued by the side of the lode. The lode in the 45 east is 4 ft. wide, composed of capel, quartz, pryan, and stones of yellow copper ore, and promising. In the 65 cross-cut, driving north, west of Hiltchins's engine-shaft, the ground is favourable, and highly mineralised.

EAST WHEAL TOLGUS.—July 19: Redruth Consols Lode: In the 34, east of John's shaft, the lode is 1 foot wide, consisting of spar and peach, with good stones of ore; the ground in the 34 cross-cut south is much the same as last reported.—Little's Lode: In the adit level, west of cross-cut, the lode is 20 in. wide, consisting of gossan, spar, and mundle.—Hocking's Lode: In the adit level, west of cross-cut, the lode is 1 foot wide, composed of mundle and spar. In the adit level, west of the cross-cut, the lode is still in a disordered state. The ground in the adit level cross-cut south is moderately easy.

EAST WHEAL VOR.—J. Pollard, July 19: The ground in the engine-shaft still remains spare for progress, and the lode is becoming more and more promising. The hanging wall is keeping the right course through the hard ground quite the same as before, this shows it is a masterly lode; this shaft is sinking by twelve men as fast as possible, and I fully believe it will make a good lode in depth. In the 70, driving west, the lode is disordered by a patch of granite, but I think it is only temporary. The engine and pit work are in good condition, keeping the water at 6 1/2 strokes per minute.

POWELL CONSOLS.—F. Puckey, C. Merrat, C. Job, July 17: Trahan's Lode: In the 250, east of Bottrill's shaft, the lode is still large, but unproductive for copper. In the 260, east of the same shaft, the lode is 3 ft. wide, and worth 151. per fm. In the 270 east the lode has made a splice, but is again increasing in width; it is now 2 feet wide, producing saving work and looking promising to improve to its former value. In the eastern stope in the back of this level the lode is 3 1/2 ft. wide, and worth 201. per fathom. In the western stope the lode is 2 ft. wide, and worth 101. per fm. In the 280 east the lode is disordered and unproductive. The lode in the stope in the bottom of this level, both east and west of the winze, will average 8 ft. wide, and worth 161. per fathom.—Hewett's Lode: The lode in the winze sinking below the 180, west of Union shaft, is 1 ft. wide, producing saving work. In the rise in the back of the 200 fathom level, west of the same shaft, the lode is 1 1/2 foot wide, and worth 101. per fm. In the 230, west of Pedler's shaft, the lode is 1 1/2 ft. wide, producing saving work, and looking fine for improvement.—John's Lode: The lode in the rise in the back of the 100, east of Austen's shaft, is 3 1/2 ft. wide, and of a very promising character, composed of quartz, pryan, peach, and copper, worth for the latter 121. per fm. In the 80 ft. level cross-cut, east of same shaft, we have intersected a lode east of the cross-course, which is 1 1/2 ft. wide, of a very kindly character, producing stones of ore, and kindly to improve after passing the influence of the cross-course.—Cook's Lode: In the 20, east of Pedler's shaft, we have intersected the cross-course, and are now driving north to cut the lode west of the cross-course. In the 30, east of the cross-cut, the lode is 1 1/2 foot wide, and worth 101. per fm. In the same level, west of the lode is 1 ft. wide, and worth 61. per fm. In the 40, east, on the north lode, the lode is disordered by a slide, the lode at present large, being only 6 in. wide, producing some rich copper ore, but not sufficient to value. The other parts of the mine are without alteration since last reported.

FRANK MILLS.—J. P. Nicholls, J. Cornish, R. Andrew, July 19: The new north adit-shaft is now down 23 1/2 fms. from surface, and progressing satisfactorily; we have about 5 1/2 fms. more to rise and sink to effect a communication. We have suspended the cross-cut west at the 115 north, and have resumed driving the east north; the lode has not yet been taken down, but where picked into near the end it appears to have much improved in character; its value shall be given next week after taking down the lode. We have commenced driving the lode in the 100, north of the 100, east of the former north stope, where the lode is yielding 12 cwt. of lead ore per fathom. The middle stope, in back of the 100, is still yielding 1 1/2 ton of lead ore per fathom; and the south stope, in back of this level, is yielding 3 1/2 ton per fathom. The lode in the 84 north, coming in over these stopes, has improved, and is now yielding good saving work, with every prospect of becoming better as we proceed. The north wide stope, in back of the 45, is yielding 1 1/2 ton, and improving; and the south wide stope, in back of the same level, 3 tons of lead ore per fathom. There is no other change in the tinwork department to notice. The tribute pitches we have at present working are yielding their usual quantity of ore. We have recently engaged many fresh miners, and are making much better progress in general.

FURDSON.—J. Collins, July 19: The progress in sinking the engine-shaft this week has been slow in consequence of a hard bar of ground. We have now a more favourable change. The ground is promising for ore, with a branch to the south of shaft yielding good stones of ore. The cross-cut north at the 21 has been driven this week 3 feet, and intersected a small flookan branch, without any ore. The ground is more firm, and not so good for progress. The pitch in back of the 21 is yielding 2 1/2 tons of ore per fathom. The pitch in back of the 11 is yielding 1 1/2 ton of ore per fathom. The pitch in back of the 21 has not been taken in consequence of the water being quick. We calculate to sample for this month from 35 to 40 tons of ore.

FURZE HILL WOOD.—Wm. Doldge, July 19: We have eased and divided the engine-shaft from the 40 to the 54, and commenced to cut trip-plat, which I hope we shall complete by the end of this week, when we shall proceed with the cross-cut north and south to intersect the different lodes with all possible speed.—No. 1 North Lode: In the back of the 40, east of cross-cut, the lode is 3 ft. wide, composed of capel, spar, mundle, and worth 101. per fm. for tin. Our engine and stamps are working well, and we hope soon to be able to get another shaft on for sale. We have forwarded a box of fine stones of ore from the back of the 40 to No. 5, Broad-street-buildings, for the inspection of the London shareholders.

GAWTON COPPER.—Geo. Rowe, July 15: We have driven nearly 6 fms. through the lode at the 50 cross-cut north, and from present appearances are getting near the north wall, where the lode is producing fine stones of yellow copper ore. We purpose to continue the drive in the same direction until the flookan part is intersected, when we shall push the drive east on the most favourable and easy part of the lode, to get under the winze sinking below the 86, when a rise will be put up with all possible vigour to form a communication with the old workings. The shaftmen are progressing very satisfactorily in sinking the shaft and cutting trip-plat.

GLASGOW CARADON.—Wm. Taylor, July 18: McCune's Lode: The 65 west continues to have a good appearance, containing some good quality ore.—Caunter Lode: The 65 west is worth 81. per fm., and likely to improve soon; the lode is much easier, favourable for progress, and letting out water freely, which is draining down the water from the western winze; this we have resumed sinking, worth 101. per fm. The middle level is worth 121. per fm. The stope is producing about their usual quantity of ore. We are pushing on the cross-cuts north and south. No change to notice in either for the week. We are having the lode driven with dressing the ore for next sampling.

GODOLPHIN HILL.—Wm. C. Vivian, J. Pope, Jun., July 14: In the shallow adit, south of pump-shaft, the lode is 20 in. wide, composed of gossan, quartz, and chlorite, and yielding tin worth 61. per fm.; price for driving, 31. per fm. In the deep adit, south-east of Parson's shaft, on the counter lode, the lode is at present small, but the appearances indicate an improvement; price for driving, 21. per fm. We have about 23 fms. to drive this level to reach the intersection of the counter by West Great Work lode, where we fully expect to make a valuable discovery. In the shallow adit, east of

the counter on West Great Work lode, the lode is 1 1/2 ft. wide, producing some good tinstone; price for driving, 11. 2s. 6d. per fm. In the shallow adit, east of new shaft, on the north lode, the lode has been small, but is now increasing in size and improving in character, so that we are encouraged to look for a further and early improvement.

JOHN POPE, July 19: The counter lode, in the shallow adit, south-east of pump-shaft, is looking very well; 2 feet wide, producing good tinning stuff throughout. The north lode, in the shallow adit, east of new shaft, is producing better work for tin, and looking kindly for further improvement. The other parts of the mine are without change.

GODOLPHIN HILL.—July 19: Harvey's shaft has now been sunk 14 fms. 1 ft. 6 in. below the 54 ft. level; the lode in the bottom is rather coarse, and the ground is very hard; but I think it is only a knot, which we shall go through in 2 or 3 yards. In the lode there is clay and spar, and a little lead, but not enough to value.

GOTHIC.—J. Williams, July 19: We are getting on very well forking the water. We have discovered more ore ground to the west of the engine-shaft, below the 17, which they have taken down; it is a branch of ore of good quality for 6 in. wide, but we cannot tell how far this ore ground may extend, much of the eastern ground having been worked away in the old times. This ore ground is of such a yield as to make good profits, and it shows the nature of the lode in the old mine. In the adit driving west into the hill the lode is 2 ft. wide, and gives out about 12 cwt. of ore to the fathom; the rest of the vein is spar and lode-stone, and seems very likely to make a still greater deposit of ore further west, or under the body of the high ground.

GREAT BRIGAN.—J. Tredinnick, July 19: The shaftmen are cutting ground for penmanship, and putting in the same in back of the 10, at the new shaft, and making every preparation to sink below the said level. In the end driving west of the new shaft, in the 10, the lode is at present small—it produces a little ore, but not to value. The stope in back of the 10, west of the new shaft, and east of No. 2 winze, is worth for copper ore 61. per fm. The stope in back of said level, further west, is worth for copper ore 71. per fm. The ground in the cross-cut driving south of Highburrow shaft, in the 20 ft. level, is of a fine character for the production of copper ore. There is no further change to notice at present.

GREAT NORTH DOWNS.—J. W. Crase, W. Jenkin, July 19: The ground at Vivian's engine-shaft continues to improve for sinking; the lode in the same consists of quartz, and is producing stones of copper ore. The lode at King's shaft, sinking below the 75, is worth 81. per fm. The lode in the winze sinking below the 75, west of said shaft, is worth 81. per fm. At Siegan's shaft, sinking below the 70, we have overtaken the water, which does not go down as fast as we can sink the same; this will be drained as the 90 is being driven west at Wheel Rose, and enable to sink the shaft deeper; the lode in the same is worth 251. per fathom. The lode in the winze sinking below the 70, the lode is 1 ft. wide, worth 151. per fm. The lode in the 70, east, driving east of this shaft, is worth 151. per fm. The lode in the 60, driving west of the same shaft, is worth 81. per fm. No other change has taken place throughout the mine since our last report.

GREAT LAXEY.—Richard Rowe, July 14: The mines continue at present much as reported on a month ago, and the raisings are satisfactory: referring to that report, I shall only notice some of the main points. In the south ground we are still cross-cutting through a large lode in the 190, and have not yet proved its entire width; the lode contains some good lead and blende, a change which (commonly having been looked for) may make further development of special interest. The upper levels in this ground are without change. In the north ground our bottom, or 213 level, continues as before; but the lode in the 205, where for some time it has been small and difficult to trace, is now large, and contains some blende; an improvement which I hope will soon lead to the discovery of the 190 ore ground in this level. The 190 ft. level end still holds good; the lode is 5 feet wide, worth 1001. per fm. The 180 end is poor; the lode in the 165 end is 4 feet wide, worth 701. per fm. The 155 end, on the east lode, is improving, worth 501. per fm. The 110 ft. level is still in good ground, worth 1001. per fm., and the stope in the roof from 1001. to 2001. per fm. Immediately above, in the new 85 ft. level, in Dumbell's, the lode is opening out exceedingly well, being in both directions 12 ft. wide, worth 101. per fm. The lode in the winze sinking below the 1001. per fm. We shall immediately, on the ends in the 85 being driven away sufficiently clear of the pump resume sinking, for the purpose of effecting the primary and long-desired object—a communication with the 110, now driving in advance below. The new trials are being persevered with as before.

GREAT SOUTH TOLGUS.—J. Daw, July 19: In the 154 east the lode is 10 inches wide, worth 41. per fm. In the winze sinking under the 154 the lode is 1 ft. wide, producing some very good ore. All the other points are the same as reported last week.

GREAT WHEAL BADDERN.—R. Pryor, H. Trengoon, July 18: We have set the following bargains to-day:—The 75 cross-cut, driving south of Hiltchins's engine-shaft, is 10 ft. wide, worth 101. per fm. The lode is letting out a quantity of water, and is in a beautiful elvan. The 65 cross-cut, to drive south of shaft by four men, at 101. 10s. per fm.—Tin Lode: The 25 to drive east of Buckley's shaft by six men, at 41. per fm. 101. 4 ft. wide, and worth 91. per fm. The stope in the back of this level by six men, at 21. 15s. per fm.; lode worth 71. per fm. We have also set seven tribute pitches, and shall now be able to give a fair trial of the tin lode, which we believe will be satisfactory. Our pay and setting went off well.

GREAT WHEAL BUSY.—J. Edwards, J. Tredinnick, C. Bawden, July 18: In the 160, driving east from Harvey's engine-shaft, the lode is 5 1/2 ft. wide, worth for copper and tin 201. per fm. At Offord's shaft, sinking below 140, the lode is 5 ft. wide, worth for tin and copper 401. per fm. The lode in the 140 end, east from Offord's shaft, is 3 ft. wide, worth 121. per fm. for copper and tin. The lode in the 140, driving west from No. 3 cross-cut, west from Fielding's shaft, is 2 ft. wide, worth for copper and tin 61. per fm. The south lode in the 120, west from Offord's shaft, is 2 ft. wide, worth 51. per fathom for copper and tin. The lode in the 110, driving east from Mathew's shaft, is 2 ft. wide, producing stones of tin, but not sufficient to value; this point is looking more promising. The lode in the winze sinking below the 100, east from Mathew's shaft, is 4 ft. wide, worth for tin 251. per fm. The lode in the 100 end, driving east from Walker's shaft, is 4 ft. wide, worth 301. per fm. for tin. The lode in the winze sinking below the said level is worth 301. per fm. for tin. The lode in the 90 end, driving east from Walker's shaft, is 9 ft. wide, worth for tin 401. per fm. The stope in the back of the level, west from said shaft, is worth 251. per fm. The south lode in the 90, east from Moyle's bottom, is 3 ft. wide, worth for tin and copper 61. per fm. We have driven a cross-cut north about 3 fms. at the 90, about 20 fms. east from Offord's shaft, which has intersected a south underlie lode; we have cut into the same about 3 ft., all of which is saving work for copper ore; the lode is not yet cut through; this lode forms a junction with the main lode about 6 fms. below the 90. The main lode is all taken away from the 100, and we discovered the south underlie lode in the north side of the old ground, about 12 fms. east from Walker's bottom; we shall be able to say more about it in course of the month. Should we find the said lode productive at the 90, we think it advisable to drive the 70 cross-cut, north from Offord's shaft, to intersect it at that level. The cross-cut is already driven about 15 fms., and by continuing it north 20 fathoms more we calculate to meet the lode. The lode in the rise in back of the 90, against Walker's shaft, is worth for tin 301. per fm. Walker's shaft is holed from the 70 to the 80 with a borer-hole; there are about 3 ft. more to rise and sink, which we hope to do in the coming week. The lode in the rise in back of the 70 is 4 ft. wide, worth for copper and tin 101. per fm. The lode in the rise in back of the 50 is 3 ft. wide, producing saving work for tin; the same remark applies to Walker's shaft, being below the 35. The ground in the 36 cross-cut, south from Walker's shaft, is still favourable for driving. We have completed cutting ground for the balance-bob at the 10, at Harvey's shaft. The beam has been brought on the mine to-day; we shall at once commence to fix the same.

GREAT WHEAL FORTESCUE.—J. Grose, July 19: In the shaft east of Millett's shaft (6 fms. 4 ft. deep) the south wall of the lode has a regular underlie of 1 1/2 ft. per fm. We shall cross-cut through the lode to the north wall, so as to take its direction and ending; the south wall carries a fine black and pryan, intermixed with copper and mundle. From these indications I expect, after sinking a little, to meet with a profitable lode. Hill's lode, a few fathoms south of Millett's lode, we anticipate will unite and form a junction about 100 fms. east. This, when ascertained, will guide us as to the spot for sinking our perpendicular shaft. Hill's lode still continues 7 ft. wide, producing gossan in abundance, with copper throughout the lode, thus giving us reasonable hopes of speedy success. No. 1 tin lode, supposed to be one of the Great Work lodes, and to the south of all our copper lodes, about 5 fms. below surface only, is 18 in. wide, consisting of good tiny work. No. 2 tin lode is 2 ft. wide, producing rich tin, and has a regular underlie north 2 feet per fm. We are clearing shafts on the Wheel Creek, and the indications I expect, after sinking a little, to meet with a profitable lode. All the works are progressing with energy, and looking at the great points of interest and promise of this property generally, I am most strongly of opinion that the results will soon be greatly remunerative.

GREAT WHEAL VOR.—T. Julian, F. Francis, S. Harris, July 19: The lode in Ivey's shaft is not well defined, notwithstanding it produces good stones of tin. The 162, west of this shaft, is worth 601. per fathom. The rise in the back of this level is about 601. per fathom. The 167, west from Ivey's, is worth 161. per fathom. The rise in the back of this level is holed. The 157, east of Ivey's, is worth 701. per fathom. The 147, west from Ivey's, is worth 401. per fathom. All the stope in this part of the mine are looking well, and worth full value. The 140, west from Ivey's, is worth 401. per fathom. The 139 ft. level, at Metal shaft, is in a very fine stratum of ground, and progressing favourably; we are under great expectation of finding a good lode, when cut. The 134, east of this shaft, is worth 201. per fathom. The winze sinking below this level, east of cross-cut, is worth 301. per fathom. The winze sinking below this level, west of cross-cut, is down about 2 fms., and worth full 2501. per fathom. The 184 west end is worth 1301. per fathom. The 174 east is worth 251. per fathom. The 174 west is worth 1001. per fathom. The rise in the back of this level is worth 701. per fathom. The No. 1 winze, sinking below the 164, west, is worth 601. per fm. No. 2 winze, in the bottom of the 164, is worth 5001. per fathom. At the stope in this part of the mine are worth over 401. per fathom. The mine never looked better than now. Our sale of tin on Monday was over 70 tons. All the machinery is in good working order.

GRYLLS WHEAL FLORENCE.—Edw. Rogers, Edmund Rogers, July 18: Standard Lode: We have completed the fixing of the 9-in. lift at the 12 below adit, and the shaftmen are now engaged fixing ladders from the adit to this level, and we expect to recommence sinking the shaft in a few days.

GUNSLAKE (Chitlers).—W. Skewis, J. Rodda, July 19: We are getting on with the sinking down of the engine-shaft below the adit fast as the nature of the work will permit. The lode in the adit level is 1 ft. wide, producing good stones of copper ore. The lode in the 10 east is producing good saving work, and looking very promising for an improvement. The stope in the back of this level is worth for tin and copper 161. per fathom. In the 10 west the lode is producing saving work, and no doubt will improve after we get a little further from the cross-course. We have three stope working in the back of this level, worth respectively 121., 71., and 61. per fm. The lode in the winze sinking below the same level is worth 81. per fm. The lode in the 24 east is producing stones of ore, but not enough to value. We have two stope working in the bottom of this level, west of shaft, each worth 71. per fathom. The lode in the 36 east is worth 61. per fm. The rise in the back of the level is worth 91. per fm.; and the winze in the bottom is worth 101. per fm. In the 36 west the lode is opening out larger, and consists chiefly of spar, peach, and pryan, with tin and copper intermixed, looking very promising for an early improvement. We are progressing satisfactorily with the dressing for our next sampling of tin and copper ore.

GWYDYR PARK CONSOLS.—W. Smyth, July 19: Gwyn Liffon end is still without change. The ground in the shaft is still hard; the lode is about 10 inches wide, of spar and good stones of lead and blende. No change in Gwydyr stope or middle level since last reported.

HALLENBEAGLE.—F. Richards, R. M. Killo, July 15: At Pininger's engine-shaft, sinking below the 56, the lode or branch is 2 ft. wide, producing stones of ore; ground more favourable. The 56 ft. level cross-cut, driving south of Pininger's shaft, is without change since last report. In the 56, driving east of the said shaft, the lode is 1 foot wide, but not to value. In the 56, driving west of pump winze, the lode is 1 foot wide, producing stones of ore, but not to value. In the 56, driving east of the said winze, the lode is 1 1/2 ft. wide, worth 121. per fathom. In No. 2 winze, sinking below the 40, north lode, the lode is 2 ft. wide, worth 151. per fathom. In No. 3 winze, sinking below the 40, north lode, the lode is 2 ft. wide, worth 121. per fathom. At Stone's shaft, sinking below the 40, north lode, the lode is 2 ft. wide, worth 61. per fathom. In the 47, driving east of Stone's shaft, on the north lode, the lode is small, producing stones of ore, but not sufficient to value. At King's shaft, sinking below the 40, the ground is rather hard. The lode in the winze sinking below the 40, east of King's shaft, on Wheel Rose lode, is 1 ft. wide, producing rich stones of copper ore, worth 51. per fathom. In the 40, driving east of King's shaft, on the north lode, the lode is 3 ft. wide, producing good stones of ore, but not to value. At Reed's shaft,

sinking below the 43, on Reed's lode, the lode is 1 ft. wide, worth 61. per fathom. In the winze sinking below the 43, east of Reed's shaft, the lode is 1 ft. wide, worth 81. per fathom. In the 43, driving east of Reed's shaft, the lode is 1 ft. wide, worth 91. per fathom. In the 43, driving west of Reed's shaft, the lode is 1 ft. wide, worth 61. per fathom. In No. 1 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 2 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 3 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 4 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 5 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 6 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 7 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 8 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 9 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 10 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 11 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 12 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 13 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 14 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 15 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 16 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 17 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 18 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 19 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 20 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 21 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 22 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 23 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 24 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 25 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 26 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 27 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 28 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 29 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 30 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 31 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 32 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 33 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 34 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 35 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 36 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 37 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 38 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 39 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 40 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 41 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 42 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 43 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 44 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 45 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 46 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 47 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 48 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 49 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 50 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 51 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 52 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 53 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 54 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 55 winze, sinking below the 43, west of Reed's shaft, the lode is 2 ft. wide, worth 151. per fathom. In No. 56 winze, sinking below the 43, west of Reed's shaft, the lode is 2

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shaft, the lode is 1½ ft. wide, worth for tin 8s. 6d. per fm.; and in the winze sinking below ditto also 8s. 6d. per fm. In the 44, driving west of shaft, the lode is showing a better appearance than for some time past, now worth for tin 8s. 6d. per fm. In the 44, driving east of shaft, the lode has a little improved, now 1½ ft. wide, and worth for tin 8s. 6d. per fm. In the 34, driving east of shaft, the lode has been taken down since our last report.

The ground in the 32 and 24 fm. level cross-cut continues much as usual.

WHEAL KITT (Uny Lelan).—W. Williams, July 20: North Eusebe Lode: The lode in the rise above the 30 is worth 10s. 6d. per fm. The lode in the 130 fm. level end, west of the rise, is worth 8s. 6d. per fm. The lode in the 110 fm. level end, west of the rise, is at present small. In the 110 fm. level end, east of the cross-cut, the lode at present is not of much value. The 90 fm. level end, east of Roger's shaft, is opening tribute ground. The lode in Phillip's shaft, sinking below the 40, is at present small. The 90 fm. level cross-cut, driving south of the Gowan lode, is progressing favourably. There is no change to notice in any other part of the mine since the meeting on July 5.

WHEAL MARGERY.—R. James, W. Rogers, July 20: At the American shaft, sinking below the 142, the lode continues without sufficient ore to value. In the 142 west the lode is worth 4s. per fathom. In the 142 east the lode is worth 7s. per fathom. In the 132 west the lode has a better appearance, and we are daily expecting a course of copper ore. In the 132 east the lode is worth 30s. per fathom. In the 123 east the lode is worth 5s. per fathom. In the 110 cross-cut we have cut a branch containing some good copper ore, but being so near the cross-course it is confused, and we are not sure if it is the lode or not. We intend, therefore, to open on it to prove this. We have no change in the several stopes.

WHEAL NORRIS.—J. Andrews, July 15: Carter's shaftmen continue to make good progress with sinking and cutting tip-tilt below the 57. The lode in the 57 east is 3½ ft. wide, producing good saving work for tin: we have about 2 fms. further to drive this end to get under the perpendicular where the tin came in the level over. The lode in the 45 east, east of Carter's, is full 3½ ft. wide, with an improved appearance. The patches of cyan referred to in my last are worn out, and the lode becomes better defined. In the 25 east, east of cross-cut, the lode is 3½ ft. wide, producing a little tin, but not sufficient to value. There is no change in the ground in the 45 cross-cut south since setting-day.

WHEAL PAR.—W. Tregay, July 20: The sunp-shaft is down 8½ fms. below the 20, in ground favourable for sinking. The 30 will now soon be reached, and as the ground is favourable the lodes will be very rapidly laid open at that level. As some of these lodes will be falling together there, the prospects of improvement are very good.

WHEAL SPARNON.—E. Chegwain, July 15: Sump: The sumpmen have made good progress in clearing up the engine-shaft and dropping the lift, now down 18½ fms. below the 40. We believe we can see the back of the bottom level, and expect to complete clearing up the engine-shaft by the latter part of next week. The men have completed bedding down Bellrey's shaft, and putting in footway, &c., in the same, and have commenced clearing up the shaft to-day. We have four men securing the adit below the rainy season sets in. In the 20 west, on north lode, the lode is 2 ft. wide, yielding spots of yellow copper ore. The 20 rise is producing stones of copper ore. The 20 east, on new lode, produces good stones of black and yellow copper ore. The 20 north cross-cut is rather spare for driving. Nothing has been intersected for the week.

WHEAL TREMAYNE.—R. Williams, J. Williams, July 19: At the new engine-shaft, in the 183 east, the engine lode is 1½ ft. wide, yielding low-priced tinstuff, with a kindly appearance for further improvement shortly. In the 143 west the engine lode is 10 in. wide, producing spots of tin in places. The cross-cut north of the same level, east of shaft, towards Allen's branches, is 6 ft., and a small branch has been intersected, composed of spar. We think the main branches are in 2 or 3 fms. In the 133 cross-cut north we have cut a branch yielding good tinstuff, worth 4s. per fm. The men are still driving north; from the appearance of the ground we think there is more branch in that direction. In the winze sinking under the same level the engine lode is 10 inches wide, yielding low-priced tinstuff. The stopes in bottom of the 133 east, on Allen's branches, are worth on an average 4s. per fm. The stopes in bottom of the 113 east, on Allen's branches, are worth on an average 10s. per fm. In the 103 east the engine lode is still disordered and poor. In the cross-cut south of the same level, towards Wallis's lode, there is no change to notice. In the same level, west of cross-cut, Allen's branch is worth 7s. per fm. The stopes in back of the same level east, on Allen's branches, are worth on an average 10s. per fm.

WHEAL UNY CONSOLS.—Wm. H. Reynolds, July 20: The lode in the flat-rod shaft is 18 or 20 in. wide, and yielding some rich copper ore. The new shaft is 30 fms. deep, and we are fixing clatren, rods, lifts, &c., preparatory to cutting into the lode.

WHEAL UNY.—S. Cowie, M. Rogers, July 15: The men in the 130 west have been working this week, and the 130 east and the incline shaft will be worked on Monday next, and the engine-shaft by Wednesday next, and we expect to get the skip-road in course for drawing on Tuesday, when we shall be in our usual course of working again. The 68, west of new engine-shaft, is becoming of a more favourable character.

AWARD OF PRIZES AT THE ROYAL SCHOOL OF MINES.—First year: Government prizes of 15s. to G. Snelus and W. Thorp. Second year: Duke of Cornwall scholarship of 30s., for two years, to W. T. Rowden; Directors' prize of 25s. for Geology, to W. T. Rowden. Third year: Edward Forbes Medal and prize of books for Natural History and Palaeontology, to A. C. Maybury; De la Beche Medal and prize of books for Mining, to R. Molteni. The following, having passed the necessary examinations, were admitted Associates of the Royal School of Mines:—Geological Division, A. C. Maybury and R. Molteni; Metallurgical Division, F. W. Potter; Mining Division, W. C. Roberts.

GREAT WHEAL VOR MINES.—In these times of universal depression in Cornish mines it is pleasant to find one green spot. The Great Wheal Vor Mines, by prudent management in the development of a most wonderful course of ore, have risen to a pitch of prosperity almost unparalleled in Cornwall; and, notwithstanding the unabating fall in the price of tin, the dividends in these mines continue to increase. Probably no such rich course of tin was ever seen as that now opening out at Wheal Metal. It has been proved 130 fms. long, by 30 fms. deep, to average over 50s. per fm. At places the lode values from 400s. to 800s. per fm. The aggregate value of 14 ends at present in operation is over 1700s. per fm. There is scarcely a point, from the 147 down to the 184, but is worth from 60s. to 100s. per fm. In a winze sinking below the 162, west of Metal shaft, 25 tons of tin were taken from a piece of ground 9 feet deep, 12 feet long, and 6 ft. wide. The present bottom of this winze is worth from 800s. to 900s. per fathom; the whole lode, 5 ft. wide, is worth 50 per cent. for tin. There is another winze, sinking below the 184, west of Metal shaft, worth over 250s. per fm. The reserves are accumulating to an amount that promises to assure to the adventurers the return of the whole of their large outlay, with a handsome profit. The returns are now 70 tons per month, two-thirds of which are from sinking and driving alone. Truly this is a wonderful mine—probably the richest tin mine in the world.

THE COPPER TRADE.—Mr. J. Pitcairn-Campbell, of Liverpool, reports:—There is no particular alteration to notice in the market, the same inactivity existing in the demand for English. The principal feature of the fortnight has been that the smelters have renewed their association, and the step will probably by degrees produce more steadiness than has recently existed. Prices have been fixed at—Tough cake and tile, 89s. per ton; best select, 89s. per ton; sheathing and sheets, 91s. Importers are firm, under the impression that differences between Spain and Chili may result in a blockade. The imports from all parts into Liverpool and Swansea during the six months ending the 30th ult. have been—

	Ores.	Regulus.	Slab.	Bar.	Fine copper.
1865...	35,980	15,984	844	7318	22,418
1864...	32,110	13,857	683	9225	21,976
1863...	41,093	8,926	892	5862	17,429
Total import in 1864, 43,081 tons of pure copper; 1863, 31,324 tons ditto; 1862, 40,326 tons of pure copper. Sales since my last have been—					
June 30...	195 tons bars, on spot here, ex "Madeline"	£78 10	0	per ton.	
" 30...	300 tons regulus, at Swansea, ex "Atton"	0	15	3	per unit.
July 1...	240 tons bars, on spot here, ex "West Australian" ..	78 10	0	per ton.	
" 1...	140 tons bars, on spot here, ex "Arica"	79 10	0	per ton.	
" 6...	250 tons regulus, at Swansea, ex "San Fernando"	0	15	3	per unit.
" 8...	260 tons regulus, at Swansea, ex "San Fernando"	0	15	3	per unit.
" 8...	475 tons bars, at Swansea, ex "Pafinder"	78 10	0	per ton.	
" 11...	1300 tons Wallaroo ore, at Swansea	0	15	6	per unit.
Quotations are—10s. 3d. and 15s. 6d. per unit for regulus and ore, 78s. 10s. to 79s. for bars, and 16s. 9d. for barilla. Stocks in first and second hands are as follows:—					
Liverpool.....	1554	1450	4526	93	
Swansea.....	3164	2408	218	—	
Arrivals from the West Coast, S.A., during the fortnight:—					
" Ann Chesbire, Valparaiso.....	Ores.	125			
" Edmund Preston, Valparaiso.....	125				
" Spirit of the Morning, Talait	98				

Tin.—On July 5 English smelters reduced their prices 3s. ton. Straits has declined 2s. to 3s. per ton since the Dutch sale; closing quotation, 90s. to 90s. 10s., nett cash.

MANUFACTURE OF IRON AND STEEL.—According to the invention of Mr. Richard Hill, of Birmingham, it is proposed to puddle the iron until it is so far decarbonised that it assumes a pasty consistence, and can be balled. When the cast-iron has been brought into this state by the puddling process it has been deprived of any sulphur and phosphorus it may have contained, and of so much of its carbon as to have become soft steel or iron of the kind commonly called homogeneous iron. It makes the partially decarbonised iron into balls in the ordinary manner, and transfers the balls to a melting furnace, where they are melted, and the steel or iron is poured into ingot or other moulds. Before melting the balls in the melting-furnace, they may be operated upon either by a squeezer or forge-hammer, so as to remove some of the scoria formed during the puddling process. When it is wished to produce hard steel, he adds to the melted steel in the melting-furnace a quantity of speiseleisen, the quantity added being dependent on the degree of hardness it is wished to give to the steel, the greater the quantity of the speiseleisen added to the melted steel the harder the steel will be. The furnaces may either burn solid or gaseous fuel, and the melting furnace may either be used with or without a blast of air.

BIAMUTH AND COPPER.—We understand that there is a mine now being worked "on the quiet" in which the copper is to an unusual extent combined with bismuth. Of course, we have no disposition to make public any details which the undertakers may consider likely to interfere with their enterprise; but we may say that the least promising of their prospects is the fact that one of their number has succeeded in separating the bismuth from the copper in the process of smelting.—S. A. Register.

SHAREHOLDERS' LIABILITY AS CONTRIBUTORIES.—In the Leeds Banking Company, the directors issued a report which falsely showed that the company was in a flourishing condition; afterwards some new shares were issued at a premium, the holders of which were not to receive any profits until a specified day, before which day the company was in process of winding-up. Some of these new shares were taken on allotment by a holder of old shares, who paid the price put upon them by the directors, the agreement being that he should receive interest until the day when profits should begin to accrue. It was held by the Lords Justices that he had been properly placed upon the list of contributories in respect of the new shares allotted to him.

The Mining Market; Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JULY 21, 1865.

	Best selected.	Good.	Best.	Good.	Best.	Good.
COPPER.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Best selected, p. ton	90 0 0	—	—	—	—	—
Tough cake & tile	88 0 0	—	—	—	—	—
Burna Burna	89 0 0	—	—	—	—	—
Copper wire	90 11 6	—	—	—	—	—
ditto tubes	0 12 6	—	—	—	—	—
Sheeting & bolts p. ton	91 0 0	—	—	—	—	—
Bottoms	96 0 0	—	—	—	—	—
Old (Exchange)	77 0 0	—	—	—	—	—
IRON.	Per Ton.					
Bars Welsh, in London	7 15 0	8 0 0	—	—	—	—
Ditto, to arrive	7 15 0	—	—	—	—	—
Nail rods	8 10 0	—	—	—	—	—
Stafford, in London	8 15 0	9 15 0	—	—	—	—
Bars ditto	8 15 0	11 0 0	—	—	—	—
Hoops ditto	9 17 0	10 10 0	—	—	—	—
Sheets, single	10 10 0	11 0 0	—	—	—	—
Fig No. 1, in Wales	4 0 0	5 0 0	—	—	—	—
Bedford metal, ditto	4 0 0	5 0 0	—	—	—	—
Bars, common, ditto	7 0 0	7 5 0	—	—	—	—
Do, merch., Tynor Tees	7 10 0	—	—	—	—	—
Ditto, railway, in Wales	7 0 0	7 5 0	—	—	—	—
Ditto Swed. in London	11 10 0	11 15 0	—	—	—	—
To arrive	11 15 0	—	—	—	—	—
Fig No. 1, in Clyde	2 15 0	3 1 0	—	—	—	—
Ditto, L. & B. Tynes	2 9 6	—	—	—	—	—
Ditto, No. 3, 4, f. o. b. do.	2 6 6	2 5 6	—	—	—	—
Railway chairs	8 10 0	8 15 0	—	—	—	—
" spikes	11 0 0	12 0 0	—	—	—	—
LEAD.	Per Ton.					
English Pig, ordy. soft	19 5 0	—	—	—	—	—
Ditto (W.B.)	20 10 0	—	—	—	—	—
Ditto sheet	20 0 0	20 5 0	—	—	—	—
Ditto rod lead	22 0 0	23 0 0	—	—	—	—
Ditto white	26 0 0	27 0 0	—	—	—	—
Ditto patent shot	22 10 0	—	—	—	—	—
Spanish	18 15 0	—	—	—	—	—
At the works, 1s. to 1s. 6d. per box less.						

REMARKS.—No improvement of any kind has taken place in the Metal Market during the week, and the return to a healthy state of business seems still unlikely to occur at present. Orders for consumption, and also for shipping, are "few and far between;" while for speculation nothing whatever is doing; and, indeed, few parties would be at all disposed to entertain speculative orders at the moment, so great is the want of confidence still felt, and which does not appear likely to be removed at present. The accounts received this week from India, also, are not so favourable; they state that the markets there are not encouraging, and there is but little doing. The accounts lately given of a better state of things has not been confirmed, and adverse influences have operated to check purchases, and to produce a less satisfactory state of trade, and to cause the demand for metals to become more contracted. This is unfortunate, as we were in hopes that accounts from India would have continued favourable, as this would have had a very beneficial effect upon the market here. The American demand increases but slowly; still appearances of a better state of things arising ere long are not wanting. It is sincerely to be hoped that with the autumn a better demand for metals may spring up, and that altogether the metal trade may receive considerable improvement.

COPPER.—The market for this metal still continues very inanimate, and transactions are by no means numerous; prices, however, continue pretty firm at the quotations.

IRON.—In Staffordshire the iron trade is rather dull, and in consequence of the elections the home orders have been very small. The continental demand continues good, but the United States orders (though some are received by almost every mail) are of small amount, and for the East Indies there is less doing. Some of the makers have orders for a week or a fortnight in hand; but, as a rule, every one is working very closely, and a good many of the mills and forges are only partially at work. In Welsh the iron trade, upon the whole, continues good. From America there is no material change, the demand being still small, but there are indications of improvement. There is a fair enquiry from the Continent, principally for railway iron, and considerable shipments are made to the South American republics. Home requirements remain about the same, excepting that iron for shipbuilding purposes is rather less enquired for. Quotations are firm, and there are no complaints of underselling. For the week ending the 13th inst. the exports reached 1633 tons. In Swedish iron prices remain much the same as last week. In Scotch pig-iron there has been little doing during the week, partly owing to the elections. At the commencement of the week warrants changed hands at 54s. 6d. cash, but afterwards fell to 54s. 4½d. cash, and then to 54s. 4d. cash; towards the close of the week the market became decidedly flat, and business was done in warrants at 54s. 1½d. cash; an improvement, however, took place, and the price recovered to 54s. 3d. cash. At the last report from Glasgow the market was rather firmer, and business was done at 54s. 4½d. cash.

LEAD is still quiet, and prices remain as last quoted.

TIN.—The market for Straits remains firm at 90s. cash, at which a fair amount of business has been done; and for arrival sales have been effected at 91s. Banca in Holland continues to be held for 56s. English is still firm at present prices.

SPELTER.—A fair amount of business has been done during the week, but generally at rather lower prices, and recently sales have occurred at 22s. on the spot. At present, the price on the spot may be quoted at 22s. 5s. per ton.

TIN-PLATES.—Buyers are rather reluctant in giving the advance of 2s. per box; but the associated makers are determined to uphold prices, and some of them are increasing their stocks, and looking forward to a further advance before long. STEEL still remains inanimate.

QUICKSILVER is firm at the quotations, although there are enquiries under the price, but without success.

LIVERPOOL, JULY 20.—Elections have so upset us here that there has actually been no business in metals to report on.

BIRMINGHAM, JULY 21.—Rylands' "Iron Trade Circular" reports:—Buyers and sellers of pigs still hold the same position, first-class melters will not recede, and consumers think they can afford to wait in place of sharing profits; second-class melters are firmer. In manufactured iron the trade is slack, but steady; prices as before.

No change for the better has taken place in the almost unprecedented depression of the MINING SHARE MARKET, and such quotations as are given may be considered, with very few exceptions, as merely nominal. It is some consolation to know that the Mining Market is not exceptionally dull; and if we find a difficulty in filling up this article with anything encouraging or lively, there is the same difficulty with those who chronicle the daily doings of the Stock and general markets; and as the *Times*, of Wednesday, said—"A period of more complete dullness was never experienced in the City, and business in the Stock Exchange remains entirely dormant." Among the very few mines in which business has been doing are East Rosewarne, Great Wheal Vor, Great Retallack, Bottle Hill, Wheal Rose, East Basset, South Condurrow, Wheal Chiverton, West Chiverton, Wheal Seton, East Grenville, Wheal Grenville, East Lovell, and a few others. East Grenville shares have been in better demand, and leave off 2½ to 3s. East Caradon, 12 to 12½; at the meeting a dividend of 10s. per share (3072s.) was declared, leaving a balance in hand of 1087s. 10s. 4d.; the profit on the quarter was 2757s. 5s. 6d. The manager states, with respect to the calumnious attacks that have been made upon the mine and its management since the last meeting, that it has been worked in a proper manner, and for the real interest of the permanent shareholders; nearly half of the underground men being employed in its development. Not one quarter of the ore ground discovered in the 80 has been touched, and nothing in the 90, more than a rise just commenced in the back for ventilation, and there is the ore ground laid open in the 60 east, on the south and new lodes. He concludes by saying that the mine is opening out satisfactorily, and with the prospect of success; and when Secombe's lode is developed at the present and deeper levels, we may fairly look forward to its continuing a good and prosperous mine. Marke Valley, 4½ to 4s.; at the meeting, held on the 14th inst., a dividend of 2s. per share (900s.) was declared. The profit on three months amounted to 696s. 8s. 5d.; balance in favour of the mine, 1303s. 6s. 5d. The report states that the reserves of the mine are very good, but the different ends are not looking quite as well as for some time past, but expected to improve. The low standard for copper ore is the most serious thing the mine has to contend with. Carn Camborne, 24s. to 26s.; at the meeting, on the 14th inst., a call of 2s. per share was made. The accounts showed a

balance in favour of the mine of 40s. 11s. 2d. The engine-shaft is down for a 50 fathom level, and the south lode expected to be cut in 4 fathoms driving. The 40 west, on the south lode, is worth 3 tons per fathom, and a good piece of ore ground opened out; on the north lode, the slope is the back of the 30 is worth 3 tons per fathom; the ends are not quite so productive as they were three months ago, but the prospects are encouraging for further improvements.

Prince of Wales, 1s. to 1s. 6d.; at the meeting a call of 6d. per share was made. The shaft is now down 44 fms., and will be down to the 45, or 15 fms. below adit, in about four weeks. In the adit the lode was of the most promising description, and the company, it will be remembered, concentrated their operations in sinking the shaft so as to prove it 15 fms. deeper with all dispatch. It will soon be proved, therefore, whether the great results anticipated will be met with. So far as indications go, nothing is said, can be more promising. Wheal Buller, 14 to 16; at the meeting, on Wednesday next, we understand no call will be required. The mine is about paying its cost, without taking away one-half of the ore being discovered monthly. The 80 is more promising for a course of tin, though for want of ventilation the progress is slow in these ends until the rise is communicated with the winze. Bottle Hill, 14s. to 16s. Clifford shares advanced to 25s. buyers, in consequence of the rise in the standard. Cook's Kitchen, 8s. to 9s.; East Basset, 19 to 21; East Carn Brea, 6s. to 6½; East Rosewarne firm, at 3s. to 3½; East Russell shares receded to 3s. sellers. Frank Mills, 6s. to 7s.; Great Busy, 3s. to 3½; Great South Tegel, 1s. to 2s. Great Vor shares in demand, at 32s. to 33s.; Hallesbeagle, 3s. to 3½. Lady Bertha shares advanced to 7s. 6d., 10s.; New Rosewarne, 7 to 8. North Rosewarne shares flat, at 13 sellers. North Trekerby, 2s. to 2½; South Condurrow, 3s. to 3½; Tincroft, 17 to 17½. Chiverton shares, after being flat at 7½ sellers, have advanced to 7½. 8. West Chiverton, 72s. to 77½; Grenville, 2s. to 2½; Wheal Rose, 21s. to 23½; Wheal Seton, 197s. to 202½; Trelawny, 17 to 18. East Lovell shares advanced to 10, 10½. Devon Great Consols, 580 to 600; at the meeting, on Wednesday, a dividend of 9s. per share was declared, carrying over 22,551s. to the next account.

On the Stock Exchange a moderate amount of business has been transacted in Mining Shares during the week. The following quotations were officially recorded in British Mining Shares:—East Carn Brea, 6s.; Great Wheal Vor, 32, 31½, 32½, 32½; Wheal Seton, 202; Great Laxey, 19s.; Chiverton, 7½, 7½, 7½; East Basset, 19s.; East Caradon, 12s. In Colonial Mining Shares the prices were:—Yudnamatuna, 1s. 1½; Cape, 11, 11½, 10½; Port Phillip, 1, 1½. In Foreign Mining Shares the prices were:—Frontino and Bolivia, 2; Washoe (5s. paid), 9½ to 9½; ditto (3s. paid), 7½; St. John del Rey, 44, 46, 45; East del Rey, 1s.; Santa Barbara, 4.

IRISH MINE SHARE MARKET.—An average amount of business was done this week in mining shares, but with considerable fluctuations. Those of the Mining Company of Ireland were stronger in the beginning of the week, and were done at 28s. 10s. for January account, but subsequently pressed for sale, buyers insisting on considerable reductions, which resulted in final quotations of 26s. 5s. for cash, and 27s. 5s. to 27s. 10s., ex div., for January account. Wicklow Coppers and Connorees were also weak, 13s. 15s., last week's lowest price, for the former having been accepted, and purchases effected in the latter at 21s. 9d. for cash and deferred account, being a drop of 9d. per share. Caryfort Mining Company's shares are beginning to recover from the recent heavy fall to 5s., and are now in request at 6s. per share. The adjourned half-yearly general meeting of this company, held on Monday last, was, we are sorry to say, not of the conciliatory character their well-wishers could desire. The directors in power had not the good tact of re-establishing unanimity by insisting on some of the discontented shareholders to join the board, but chose two of their most conspicuous supporters to fill the vacancies in electing Messrs. James Crotty and R. J. Donit, the latter having only just retired by rotation. On behalf of the Opposition to the present directors, which has gained considerable strength since the meeting on the 3rd of this month, a formal protest was lodged against the legality of the proceedings on Monday last, together with a requisition, as we are informed, to call another extraordinary meeting for the purpose of appointing a new board of directors. From the directors' statement of accounts, made up to the 30th of April last, and other information, it appears that the expenditure of the Caryfort Mining Company has been 8000s. for the purchase of their mines, paid in 3200 fully paid-up shares of 2s. 10s. each, of which about 1600 went to Mr. Stanton, the original lessee, and 1600 to eight gentlemen (Mr. Val. O'Connor having declined to participate) of whom only two—Messrs. W. R. Fayle and Michael Murphy, are members of the present board of directors now sought to be removed. That from May 1, 1859, to Oct. 31, 1864, the outlay on the mines, including about 1800s. for six years' directors' remuneration, &c., amounted to 20,788s. 15s. 10d., making a total to the latter date of 28,788s. 15s. 10d. From Oct. 31, 1864, to April 30 last, the expenditure amounted to 1969s. 11s. 1d. against receipts, 214s. 12s. 1d. cash, and other balances brought forward on Oct. 31, 1864, 1113s. 15s. in call; 600s. from paid-off loans, and 41s. 4s. for interest and transfer fees. The expenditure of the 1864s. 11s. 1d. is detailed as follows:—157s. 14s. in wages and materials on Ballisilligue Mine; 414s. 4s. 6d. on Ballintemple Lead Mine; 376s. 11s. 8d. on Ballinvalley; 421s. 15s. 2d. on gold royalties; 84s. 10s. on exploratory operations; and 296s. 5s. 6d. for directors' remuneration, Dublin office, and sundry expenses. Against these outlays the company have raised at Ballintemple 251s. 5s. 8d. in lead ore sold, and 55s. estimated value of ore on hand; in gold sold 113s. 8s. 2d., and in lance in favour of the company of 533s. 4s. 2d. in cash at bank, &c., and bills receivable, and 144s. 17s. 9d. in estimated value of lead and gold yet on hand, besides about 20,000s. of capital, if circumstances will justify its being called up.

The TAMAR LEAD AND SILVER SMELTING COMPANY, with a capital of 60,000s., in shares of 12s. each, has issued its prospectus, the object of the undertaking being to purchase and carry on the well-known Tamar Works, at Beerferris, Devon, which cover 4 acres, and are held for 21 years from the Earl of Mount Edgcumbe, at the rental of 120s. per annum. The purchase-money is fixed at 10,000s., the payment of one-fifth of which is to be deferred until the second issue of shares. The vendors leave 3000s. of the purchase-money in the banker's hands, to pay 12 per cent. upon the paid-up capital, and agree to take shares for the amount, when it is proved that the company can pay 12 per cent. legitimately. The works can be put in operation at a moderate cost, and are estimated to yield 25 per cent. per annum dividend.

The FALMOUTH SMELTING AND WHITE LEAD COMPANY, with a capital of 100,000s., in shares of 10s. each, has issued its prospectus. The object of the undertaking is to develop Mr. John Arthur Phillips's patent for making white lead direct from the ore. The purchase-money for the smelting-works is 7500s. Further particulars will be published next week.

At Truro Ticketing, on Thursday, 4823 tons of ore were sold, realising 18,440s. 18s. The particulars of the sale were:—Average standard, 120s. 18s.; average produce, 5s.; average price per ton, 3s. 16s. 6d.; quantity of fine copper, 252 tons 4 cwt. The following are the particulars:—

Date.	Tons.	Standard.	Produce.	Price per ton.	Per unit.	Ore copper.
June 22...	4378	£119 6 0	57s. 4s. 6 0	14s. 6d.	27s. 10	10

BUYER of Central Mines, North Dolomite, and Chilverton. 60

Copper Ore for sale at Swanes, July 25.—Benhaven 736—Cape Copper Mining Company—Newfoundland 106—Gwalla Ore 87—Kamantoo 63—Leghorn 44—Cape 48—California 23—British Regulus 23—New Cornwall—West Australian Mining Association 19—Copper Ore 8—Copper Regulus 3—Régulus 2—Copper Regulus 17.—Total, 1602 tons.

COPPER ORE TICKETING FOR 1865.

July 27	Truro	Oct. 19	Truro
Aug. 3	Camborne	" 28	Redruth
" 10	Redruth	Nov. 2	Redruth
" 17	Truro	" 23	Redruth
" 24	Redruth	" 28	Truro
" 31	Camborne	" 30	Redruth
Sept. 21	Redruth	Dec. 14	Redruth
" 21	Truro	" 14	Truro
" 28	Truro	" 21	Redruth
Oct. 5	Redruth	" 28	Truro
" 12	Redruth		Redruth

WATSON AND CUELL'S MINING CIRCULAR.

WATSON AND CUELL,
MINING AGENTS, STOCK AND SHARE DEALERS, &c.,
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Messrs. WATSON and CUELL having made arrangements for transferring their weekly Circular, which has had so large a circulation during the past ten years, to the columns of the *Mining Journal*, their special reports and remarks upon Mines and Mining, and the state of the Share Market, will in future appear in this column.

In the year 1843, when Cornish mining was almost unknown to the general public, attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. J. Y. Watson, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium published in 1843 Mr. Watson was the first to recommend the system of a "division of small risks in several mines, ensuring success in the aggregate," and Messrs. Watson and Cuell have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and share-dealing than there is at present; and, from the lengthened experience of Messrs. Watson and Cuell, they are emboldened to offer, thus publicly, their best services to all connected with mines or the market, as they have for so many years done privately, through the medium of their own Circular.

Messrs. WATSON and CUELL transact business in the purchase and sale of mining shares, and other securities, payments of calls, receipt, and transmission of dividends, obtaining information for clients, and affording advice, to the best of their knowledge and judgment, based on the experience of more than 30 years active connection with the Mining Market.

Messrs. WATSON and CUELL also inform their clients and the public, that they transact business in the public funds, railways, docks, insurance, and every other description of shares dealt in on the Stock Exchange.

Messrs. WATSON and CUELL are almost daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

Messrs. WATSON and CUELL having agents and correspondents in all the mining districts, and an extensive connection among the largest holders of mining property, have the more confidence in tendering their advice on all matters relating to the state and prospects of mines and mining companies, and are enabled to supply shares in all the best mines at close market prices, free of all charges for commission.

COAL-CUTTING MACHINERY.—With a view to enable the picks of coal-cutting machines to make a complete revolution, so as to work much more effectively and quicker than heretofore, and at the same time to render the machine capable of easy transportation from one part of the mine to another, Mr. F. W. Armitage, of Barnsley, has patented an invention, according to which he constructs the foundation-plate of the machine in two parts, which are provided with strong flanges, or otherwise so formed that they can be firmly united or bolted together, end to end, so as to form one solid plate when the machine is in working order, and be readily taken asunder when it is required to transport the machine from place to place, so that being in two parts (each only about 4 ft. long, or of any other convenient length) the machine is much more manageable, and capable of being turned in a much smaller space, than it would otherwise be. When the machine is in working order the foundation-plate is supported by four wheels running on the ordinary tram rails of the mine, one wheel being placed at or near each corner, and the picks revolve horizontally in the space below the plate and between the wheels; but when the plate is taken asunder each part thereof is carried by four wheels, the wheels being mounted in brackets or carriers, which are readily detached from or fixed to the plates in the positions required. The whole of the machinery is attached to one of the plates, across which it is mounted diagonally, so as to bring the crank-shaft which works the picks to the front inner corner of this plate, in order that when in working position the centre of revolution of the picks shall be in front, and as near as possible to the face of the coal, and about midway between the extremities of the foundation-plate. The driving machinery consists of a horizontal steam cylinder, piston, and valve; a connecting rod attached to the cross-head of the piston rod drives a vertical crank-shaft, the upper end of which is carried by a bracket bolted to the plate, and the lower end immediately below the plate is provided with a cross-piece or strong boss, having sockets in which the arms of the picks are securely fixed. The slide valve is worked by a tappet on the cross-head of the piston-rod. As before mentioned, this one half of the foundation plate carries the whole of the working machinery; the other half (which is bolted to it when in working position) being for the purpose of getting a second fulcrum or support outside the circle in which the picks revolve. It will be evident that this same arrangement would be equally applicable to the mounting and driving of any other form of revolving cutter for such purposes, and is not necessarily confined to the use of picks, as above described; and, also, that the foundation-plate may be composed of more than two parts, if found necessary.

TREATING IRON PLATES FOR SHIPBUILDING, BOILER-MAKING, &c.—Mr. Neil M'Haffie, of Glasgow, has recently obtained letters patent for his "improvements in treating iron plates for shipbuilding, boiler-making, and similar other uses; and wrought-iron in other forms, to render it capable of resisting oxidation or destruction by sea and other water, and atmospheric and other corroding influences." For these purposes the wrought-iron, whether it be in the form of plates or sheets, or forged or fashioned to any desired shape, is surrounded with oxide of iron, or oxide iron ore, or with oxide of manganese, or oxide of zinc, or matters containing these or similar metallic oxides or substances, and the whole is heated by preference to a full red-heat; it is maintained at this temperature for many hours, and afterwards is gradually cooled. The wrought-iron plates, sheets, forgings, or other pieces, will by this treatment be found to have undergone a peculiar change, which enables them to resist more or less completely destructive or corrosive influences.

THE CONSUMPTION OF SMOKE.—M. Felix Maurice Antoine Picard, of Lyons, engineer, has introduced to the world an invention, the object of which is to obtain complete combustion of the fuel, and, consequently, the greatest amount of heat, without the evolution of smoke. This is accomplished by obtaining uniformity and regularity of the feed, with uniformity of temperature and dryness of the fuel; also by obtaining uniformity of clearing away the slag or refuse without opening the furnace or disturbing the process by variations in the volume of air introduced, and by the conversion of the fuel in a first furnace into combustible gases, and the subsequent mixture of these gases with air at a high temperature. The air, to promote combustion, is divided to act in two principal directions, one on the fuel under combustion, and the other upon the gaseous products thereof. The first comes in contact with the ignited fuel in excess, producing carbonic oxide (oxide de carbone) and carbonized hydrogen (gas hydrogène carboné); the other in minute streams penetrates the gaseous products evolved from the first combustion, producing by further combustion carbonic acid and steam, with great heat.

EXTRACTING HYDRO-CARBON OILS.—In manufacturing oil from coal or other bituminous substances by destructive distillation, it is of the utmost importance that the distillation should take place with a low and even degree of temperature, barely sufficient to develop the oleaginous vapours, while a too high degree of heat converts a portion of the oily vapours into permanent gases, thus diminishing and deteriorating the product. The rotary retort has been found most suitable for the purpose, making distillation practicable with a less degree of heat than must be used with a stationary retort. But in using the revolving retort it will be found that the residuum of the bitumen or material used leaves a coating on the interior sides of the retort, which coating gradually increases with every charge, and being a poor conductor of heat, makes a higher exterior temperature necessary with every charge, while a portion of the oily matter remains on the coating, and is thus burned and converted into permanent gases. In order to get the best and largest product from the material used it will, therefore, be found necessary to clean the retort for every charge, which in the ordinary way can be done only when the retort is cooled down, so as to permit a person to enter it. Mr. C. J. Lundborg, of Soderstjele, Sweden, proposes thus to prevent or greatly diminish the coating alluded to, so that a great number of charges may be run without any cleaning or stopping the work, while at the same time a much larger yield and a better quality of oil is obtained, and the heat is distributed more equally in the retort. He obtains the desired result of keeping down the coating and distributing the heat by introducing a certain quantity of pieces of iron or hard stones with the coal or bitumen into the retort. The loose iron or stone will by its specific gravity follow the bottom of the retort (which may be ribbed in the interior surface) during its revolutions, rapidly acquiring the temperature of the surrounding surface exposed to the fire, and being mixed with the coal or bitumen, which by the rolling action of the pieces of iron or hard stones is crushed into small fragments, the heat is diffused more equally through the mass, and the adherence of the coating before alluded to is almost prevented. The yield of oil by this process is much increased, and its quality greatly improved. He uses pieces of iron or granite stones, weighing from 1 to 2 lbs. each, and put generally about 2 cwt. to a charge of 1000 lbs. of coal. The quantity of loose iron or stones used, or the weight of the separate pieces, may, however, be more or less, according to the nature of the coal or bituminous material used, and he does not see any reason why pieces of some other metal than iron, or any other kind of hard and heavy substance, may not suit equally well.

Notices to Correspondents.

* * Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be regularly filed on receipt: it then forms an accumulating useful work of reference.

MURIATIC ACID.—Can any of your correspondents inform me where I can get a supply of muriatic acid at a low price, in quantities of 10 or 15 tons at a time?—W. H. C.

WIGAN MAIN ARLEY MINE COAL COMPANY (Limited).—Can any reader give me information as to what this company is doing, and its prospects. Some time ago I applied for and was allotted shares, and duly paid the allotment money, but have never heard anything further, nor have even had certificates of shares sent.—A. SUMMERS.

Several letters reached us too late yesterday for insertion in this week's Journal, among them those of "A Tin Miner" on the Tin Trade; "Engineer" on the Hauglands of Coals; "Civis" on the Prospects of Mining; "S." on Improvements in Tin Dressing; Mr. Josiah H. Hitchens's reply to the directors of the Caryfort Mines, Ireland; "G. C." on the Wheel Friendship District, &c. We should feel obliged if correspondents would send their communications as early in the week as possible.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, JULY 22, 1865.

NORTHERN INSTITUTE OF MINING ENGINEERS.

The closing meeting was held at the Royal Institution, Manchester, on July 14—Mr. FOSTER, one of the Vice-Presidents, occupying the chair. Thanks having been voted to the Council of the Royal Institution for the use of the rooms, and to the local secretary, Mr. PEACE, the Chairman proposed the appointment of a committee to take into consideration the subject of Tail Ropes, which had been discussed at the previous meeting, the particulars of which appeared in last week's Journal. The motion was unanimously agreed to.

Mr. EMBLETON's paper on Coal-Cutting Machines was next called for discussion, and the author of the paper supplied, by way of introduction, the details asked for when the paper was read. The machine referred to—that of Mr. W. E. CARRETT, of Leeds—was exhibited at work outside the building. The machine had been in operation since March last, and during the whole of this period the rate of boring the coal was 8 1-10th feet per hour. The cost has been 4 2-10d. per ton. The average depth was 3 ft. 6 in.; sometimes it had been 3 ft. 9 in., and sometimes 3 ft. 3 in. The greatest distance cut was on May 16, when 153 ft. were cut in eight hours, being at the rate of 19 ft. per hour. The eight hours included stoppages, but the actual time the machine had been working was five hours, which gave 30 ft. per hour. The minimum amount of work done was on June 13, when eight yards were cut in eight hours, and that also included stoppages. The coal in the seam averaged 2 tons to the yard.

A discussion ensued, after which Mr. DAGLISH read the report of a committee appointed by the Council of the Institute to consider the subject of Safety-Lamps. He said the appointment had arisen from the statement of Mr. GREENWELL to the President (Mr. NICHOLAS WOOD), that under certain circumstances safety-gauzes gave off a vapour which was inflammable, and that it was possible an accident might arise from that cause. The first series of experiments had been made upon the gauze itself, and he produced a diagram in illustration of the experiments. One portion showed the introduction of gauze into a red-hot pipe, and when that was done the inflammable vapour went off from the gauze, and was ignited by the red-hot pipe. But it was to be observed that the heat in the lamp was internal, and that, therefore, the gauze was not in that case immersed in a red-hot atmosphere. In the next instance a red-hot pipe had been introduced into the interior of the gauze, and in that case there had been an appearance of flame on the outside of the gauze. It was supposed from that that the flame was ignited at the end, and so passed along the outside. Upon this impression a shield had been fitted upon the gauze, and, after that was done, the flame could not be observed beyond the shield; so that the conclusion was, that if they had a lamp with the heat internal there could be no passage of flame beyond it. He then referred to some experiments which had been made with a view to ascertain what was the cause of the inflammable vapour arising from the gauze, and there was no doubt that the cause was the oil used in the manufacture of the gauze. It did not exist in the wire, but was brought into the gauze in the course of weaving, and the oil was so identified with the iron that it could not be brushed off. They never could practically place a lamp in the position of being red-hot, because that required time, and while the time was passing, and the gauze growing hot, the vapour was volatilised, and passed away before the red heat had been attained. When they got the gauze red-hot then it was safe, because the oil had been vaporised. The committee were of opinion they had proved that even if it were not so, and the gauze could be made red-hot, the flame could not pass. In conclusion, he said the committee intended to proceed with the experiments. They had only recently got into form an apparatus for testing the lamps by placing them in an atmosphere impregnated with fire-damp, and whirling them violently, so as to place them under conditions which would fully try their capacity to resist the danger.

A long and interesting discussion followed. Mr. DICKINSON, the Inspector of Mines, said it had been proposed that the Manchester Geological Society should institute such a series of comparisons, but the idea had been abandoned, because it was considered that they were unsafe. He had himself been permitted to witness some of the experiments which had been described, and the result in his mind was a conviction that the DAVY lamp possesses very great security indeed. It was surprising to see how difficult it was to get the flame through it. Even when the oil was on the gauze, it had actually to be volatilised before the explosion would take place through the gauze. At the same time he agreed that it was desirable, where men were to be subjected to the eruption of fire-damp, and where the whole of the working lamps in a mine might be liable to be placed in an explosive mixture by a sudden outburst of gas, that these lamps should possess a self-extinguishing property. If they went to Belgium, where the collieries were worked very much deeper than in this country, some of the shafts being nearly 1000 yds. in depth—they would find that the DAVY lamp was actually prohibited by the mining regulations, which provided that the lamps used in mines must be self-extinguishing. STEPHENSON's lamp would be admissible there. Referring to the strong objection of the men to the use of safety-lamps here, he said the lamp which was in use in Belgium would give four or five times the amount of light given by the safety-lamp. It was the MUESELER lamp, and it was a matter of surprise to him that the lamp, which was used by thousands and thousands in Belgium—he had seen 1500 in one mine—had not been introduced here. It was found that the breakage of glass did not cost so much in the end as the breakage of gauze. The only reason why there were not used here was that the men were afraid of them. They put the flame a little too high, and got a crust upon the top of the cotton, which interfered with the free burning of the lamp. If they would be content to use it with the light it was qualified to give they might use it all day, as in Belgium. They must also be careful to keep it upright, for if they turned it on the one side it went out. In practice, however, these disadvantages are entirely got over.

Mr. DAGLISH then read a paper descriptive of a new water-gauge invented by himself, and which he presented to the Institution.—Thanks were voted to the gentlemen who had contributed papers, and also to the Chairman, and the proceedings then terminated.

COAL-WASHING MACHINERY.

In comparing the relative merits of two machines intended to accomplish the same object, yet constructed upon similar principles, it is obviously desirable that the circumstances under which the trials are made should be as nearly as possible similar, yet it is seldom so excellent an opportunity for comparison presents itself as in the case of the coal-washing apparatus referred to in the paper of Mr. GILROY, read before the North of England Institute of Mining Engineers at Manchester. The machinery put up by Mr. GILROY at the Ince Hall Collieries upon the gravitation principle was compared with that of Mr. LANCASTER on the agitation principle at Kirkless Hall Collieries, almost adjoining. The Kirkless Hall machine has been at work for some time, so that its advantages and defects will have been fully ascertained, and as the Ince Hall apparatus has also been in use for upwards of a year its merits must likewise be well known. The Ince Hall machines are doubtless as simple as could be desired, and no doubt very good results are obtained with them, but still there is a considerable amount of machinery subject to wear and tear, and a large number of parts liable

to derangement. In Mr. GILROY's apparatus, on the other hand, there is practically no machinery, the slack to be washed being simply passed along a slightly inclined line of spouts—in fact, an elongated riffle bar. The 600 feet. For the first 437 feet the fall is 1 in 18, and it is then decreased to 1 in 24. The necessary riffles, or weirs, are placed in this space, and the impurities collected behind them are periodically removed. At 329 ft. from the slack screen is a valve, which is flat with the bottom, to facilitate the removal of dirt. The length and inclination of the spouts were determined by experiment, and Mr. GILROY is of opinion that the further you can carry the slack, up to 500 yards, the better. The fact of the slack being washed for 4-1/2 per ton is of itself sufficient to recommend the apparatus, more especially when Mr. LANCASTER, who has himself long used a machine regarded as remarkably economic and efficient, states that the cost which he incurs in washing is considerably larger—more than double, the coke from washed coal was superior to that from unwashed. Mr. STEPHENSON enquired whether the relative quantity of the ash in the coke from the washed and unwashed coal had been ascertained? Mr. GILROY was not aware that it had been, but they found that before they commenced to wash the coke came out very silvery, but they now obtained it 4 inches square. The question which occurred to him was whether this difference arose from removing the impurities, or from the moisture, or any other cause. Mr. LANCASTER thought it was probably due to the moisture. Mr. COCHRANE thought that if you rid the coal of the shale you must get good coke. If you make coke from coal free from impurities its quality must be better than when the impurities were left in. Mr. MARLEY agreed with Mr. COCHRANE that the difference arose from the mechanical action of the foreign matter. Mr. SOUTHERN said that it was not always so—that the coke from washed coal was the better, and Mr. STEPHENSON remarked that his experience went to confirm Mr. SOUTHERN's opinion. Now, that the removal of the impurities from the coal to be converted into coke should produce no improvement in the resulting coke certainly appears marvellous, and it would be particularly interesting if the several gentlemen who have given the opinions in question would state the composition of the various coals from which the results have been obtained, in order that some judgment may be formed as to the classes of coal which require washing, and the classes that do not.

TAIL ROPES, ENDLESS ROPES, AND ENDLESS CHAINS.

There was, probably, no paper more generally interesting than that by Messrs. G. C. GREENWELL and C. BERKLEY on Tail Ropes, read before the North of England Institute of Mining Engineers, at Manchester. The paper strongly advocated the tail rope system as superior to every other, and the results obtained at Marley Hill Colliery, Durham, were given in confirmation of this opinion. At the colliery in question the engine is placed in a chamber under the wagon-way, in the rear of the shaft. It has two horizontal cylinders, 20 in. diameter, 3-1/2 ft. stroke each. On the main shaft is a fly-wheel, 5 tons in weight, and a spur-wheel 6 feet diameter, into which, on opposite sides, two spur-wheels, also 6 feet diameter, work with sliding gear. On each of the shafts of these spur-wheels is fixed a drum, 6 ft. in diameter and 3 ft. wide. Two boilers, 40 ft. long and 5-1/2 ft. diameter, with egg-ends and wheel-flues at the surface, and a steam-pipe, 582 ft. long and 7 in. internal diameter, supply steam. The pipes are covered with dry hair felt, closely lapped with tarred small lin, and the whole coated with boiled tar and sand. There is near the engine a receiver 10 ft. long, 3-1/2 ft. diameter. The ropes are of iron-wire, weighing 7 lbs. per fm., and measuring 2-1/2 in. circumference. The length of rope required is three times the length of the plane. An experiment had shown that the engine drew 70 loaded tubs on a practical level, 420 yards, in two minutes. There were 5863 yards of rope in motion, weighing 20,520 lbs. In this length there were 240 rollers, amounting to 4380 lbs., and 250 sheaves 7125 lbs.; so that the resistance was 11433 lbs. The weight of the full tubs was 105,840 lbs., equal to a resistance of 12904 lbs. The total resistance, therefore, was 24344 lbs., which, multiplied by 630 ft., the rate per minute, gave a total resistance in pounds moved 1 foot per minute of 1,533,722 lbs. The pressure of steam was 29 lbs. per square inch, representing power 3,826,468 lbs. moved 1 ft. per minute. The effective performance of the engine was, therefore, 40 per cent. of the indicated power (no reduction being made for friction of engine, resistance of atmosphere, &c.) The usual reduction of one-third from the indicated power would make the effective power 60 per cent. of that of the engine. In five days 25 tons 2 cwt. of coal are used, and the quantity of coal and fire-clay drawn upon the planes was 2805 tons; the engine being employed not more than 10 hours per day. Ten men and six boys were employed. The cost of bringing 159,553 tons 13 cwt. of coal over the way in one year was 15037. 10s. 9d., or 13d. per ton per mile. The same amount of work formerly required 24 horses, and cost 25007. per annum. But, in addition to this, the same machinery would bring the coal double distance, which would require 40 to 50 horses. The only disadvantage of the machinery was that any derangement involved the entire stoppage of the plane until it was repaired; such stoppages, however, need not be frequent.

The tail rope system had been tried by Mr. J. T. WOODHOUSE, at the Morley Colliery; he considered it the best mode of drawing; he had had one tail rope down for eight years, and had laid another since. Mr. GILROY referred to small wire-ropes being in some collieries near Wigan substituted for the endless chain, which removed the objection to the weight of the latter. Mr. LANCASTER advocated the tail rope system. With the tail rope they could only travel about three miles an hour; with the tail rope system about ten miles. He believed its introduction would be of great service in facilitating work, especially where the road was flat. He thought more work could be done with the tail rope and a single way than with an endless rope and a double way. Mr. STOTT, who employs the endless chain system, was equally satisfied with its superior economy. He had in Derbyshire chains which were put in 11 years since, on an incline of 1 in 5, drawing coal 560 yds., and 150 tons a day, yet they had never cost 1s. for repair.

SAFETY-LAMPS COMPARED.

The relative merits of the DAVY, STEPHENSON, and MUESELER lamps has been again largely discussed, and this time under the most favourable circumstances, since it was in the presence of a large number of the most competent authorities connected with collieries—at the meeting of the North of England Institute of Mining Engineers, at Manchester—who could speak of the lamps from their own practical experience, and at once to meet the objections urged against them by those in favour of another form of lamp. The report which gave rise to the discussion in question was that of the Committee appointed by the Institute, in consequence of Mr. GREENWELL's statement that under certain circumstances the gauze of a DAVY lamp will give off inflammable vapours, which communicate flame to the exterior of the lamp, and produces explosion. The experiments were first tried by placing a red-hot iron tube around a cylinder of gauze, when no flame passed upon gas being applied within the gauze cylinder; a red-hot iron bar was then passed within a cylinder of gauze, and although at first it appeared that flame did pass, this was proved not to be the case, but that the flame escaped from the end of the cylinder; for upon a shield being placed around the gauze no flame was found beyond the shield. It appears that while oil poured upon red-hot iron will ignite, yet the soiling of gauze with oil is not likely to produce explosion, since the committee found that the gauze could not be heated red-hot so quickly as the oil volatilised.

To ascertain the velocity with which it was necessary to move a DAVY lamp through an explosive mixture to cause explosion, a box was provided with an upright spindle, carrying an arm with a stand for the lamp to be tested, and the necessary means for revolving the spindle, counting the revolutions per second, and supplying definite mixtures of gas, were provided. The top of the box was arranged to blow open when the explosion took place, to prevent danger, and the sides of the box were of glass, to enable the progress of the experiments to be observed. Upon a given velocity being obtained, the gauze passed flame in all cases, and the gauze ignited before the gauze attained a red heat. The velocity necessary to explode the gas varied with the strength of the mixture—one part gas with five parts air gave a sluggish explosion, the flame burning yellow, while one part gas and ten parts air gave a bad explosion, and a blue flame. The committee intend to proceed further with the experiments, which they consider at present very incomplete, and the result will be recorded. The effect of gas under pressure upon the lamp was also tried, and gas was passed, but with the STEPHENSON lamp the light was in all cases extinguished before an explosion took place.

But it seems that, although the gauze of the DAVY can be made to pass flame, it is the only lamp that can be relied upon in testing for gas, who, however, it should ever be placed in the hands of a collier below the rock, fireman appears to be a great question. Mr. COOPER enquired whether

the committee had tried the STEPHENSON lamp in the whirling apparatus, and the reply was that it would have been useless, as the gaseous mixtures themselves would have extinguished it. Mr. FORSTER said it did not follow that raising the gauge to a red heat would produce explosion. In the year in which he started in life they worked for three months in Hetton Colliery with lamps red hot, and there was no explosion; Mr. BUDDLE was the viewer at the time. Mr. HOSON hoped it would be well understood that the Chairman was referring to a long time ago, and not to the present time. Mr. FORSTER said that at present no colliery viewer alighted the men to work when any gas could be seen in the lamp. Mr. COOPER believed it was admitted to be a fact that a DAVY lamp would pass flame, and that a STEPHENSON would not do so, consequently the STEPHENSON was the safer of the two. If there were no counterbalancing circumstances, therefore, it ought to be more generally used than the DAVY. If it could be proved that the DAVY had some great advantage over the STEPHENSON, which had not been brought forward, the case might be different. Mr. ARMSTRONG said that the STEPHENSON was not applicable to the examination of workings, because immediately you came into gas the lamp was extinguished. Mr. DAGLISH said that with the STEPHENSON lamp you never knew the presence of gas until your light was out. Mr. MATTHEWS wished to notice an instance of the advantage of the DAVY as compared with the STEPHENSON. During the night in one of the Murton Pits a blower fouled one entire district, but the man got out safely, and kept his light; whilst had he had a STEPHENSON he would have been instantly left in darkness.

The advantage which the North of England Institute of Mining Engineers had conferred upon the mining community was especially pointed out by Mr. DICKINSON, who remarked that these experiments with the safety-lamp were among the most important. It was a subject upon which much doubt existed, and the very fact that so much distrust had been placed in the lamp was of itself productive of evil. It was proposed at the Manchester Geological Society, by himself, that some such series of experiments should be made; the late Mr. GOODWIN was also a supporter of the proposition, and Mr. HORSFALL was another, but they were overruled, from the fear that the experiments would be attended with too much danger. Upon hearing of the experiments to be made by the North of England Institute, he applied to Messrs. DAGLISH and WOOD, and was allowed to be present at the trials at Hetton Colliery. There could, he thought, be no question that the DAVY lamp does possess much security, but he considered it was better not to place it in the hands of the collier.

In Belgium, where they have extremely fiery mines, and some 1000 yards deep, the DAVY lamp is actually prohibited, because not self-extinguishing. But the great objection to remove, so as to secure the general use of the lamp, is that of the light; the lamp is not so good a light as a candle, and this makes a difference to the collier equal to perhaps 2d. per ton. Now, the lamp which the Belgians use—the MUESELER—gives four or five times the light of the DAVY lamp, and he had seen 1500 of these MUESELER'S in use in one colliery. They last longer than the DAVY, and if Englishmen would be contented with the amount of light they are constructed to give, they might work well by them. But the men will turn them too high, and the result is that the wick caps, and the light is diminished. The breakage of a glass is far less frequent than the breakage of a gauze, and all that is necessary is to keep the lamp upright, as if it be turned on its side it goes out. The MUESELER lamp has also the same advantages as the STEPHENSON—that it is extinguished by explosive gas, so that it can be safely placed in the hands of any common collier.—Mr. CLEGG LIVERSEY said that when he was at a Belgian colliery, some two years since, he heard from the manager that he much preferred the DAVY lamp to their own; it did not appear to be then prohibited.—Mr. DICKINSON said that there was a BOTT lamp, with a second gauze at the top, and which was thus made self-extinguishing; but he believed at present the MUESELER was the only one in use.—Mr. FORSTER said that he had every confidence in the DAVY lamp, and would willingly trust his own life to it, but he would rather not trust a collier—he would prefer to give him a STEPHENSON lamp.

SOUTH WALES INSTITUTE OF ENGINEERS.

The ordinary general meeting was held at the Assembly Rooms, Cardiff, on Wednesday. The following members were present:—Mr. W. Menelaus, President; Mr. A. Bassett, Cardiff; Mr. Dyne Steel, Newport; Mr. T. F. Brown, Machen; Mr. R. Bedlington, Rhymney; Mr. T. E. Wales, Government Inspector of Mines, Swansea; Mr. Birbeck, Tondur; Mr. David Joseph; Mr. David Thomas, Cwmavon; Mr. George Brown, Mountain Ash; Mr. J. Huxey, Newport; Mr. George Martin, Dowlais; Mr. J. Naysmith; Mr. Cox, Ebbw Vale; Mr. G. Wilkinson, Aberdare, &c.

The President (Mr. W. Menelaus) took the chair shortly after twelve o'clock. Mr. ALEXANDER BASSETT nominated Mr. George Martin, Dowlais, as President for the ensuing year. Mr. Martin had always taken an active part in the proceedings of the Institute, and he was also a thorough practical gentleman.—Mr. BEDLINGTON seconded the proposition, which was unanimously agreed to.

Vice-Presidents.—Mr. Cox and Mr. Brogden, who retired by rotation as vice-presidents, were re-elected.

Council.—The following members were nominated on the committee:—Mr. David Thomas, Mr. David Joseph, Mr. W. T. Lewis, Mr. Maynard, Mr. Rees, and Mr. Bedlington.

New Members Elected.—W. Thomas, Cwmaman Colliery; J. J. Bodmer, Newport; Radolph Bodmer, Newport; Benjamin Jones, Rhymney; W. R. Williams, F.G.S.; Lewis Thomas, Mardy, Aberdare; W. H. Williams, Cardiff.

Mr. H. G. Evans, Cardiff, was re-elected treasurer, and Mr. E. Bridgen was re-elected secretary.

Mr. ALEXANDER BASSETT said he was glad to inform the members that one of Messrs. Mather and Platt's boring-machines had been at work at Cardiff for some time, with the most satisfactory results. The machine had been tried for boring at Messrs. North and Lowe's brewery, and a depth of 200 feet had been attained, the bore-hole being 18 in. in diameter. Mr. Mather and Messrs. North and Lowe had kindly consented that the members should inspect the machine at work, and he, therefore, proposed that they should adjourn for that purpose.

COPIES OF REPORTS FOR THE WRITERS OF PAPERS.

Mr. Cox said before they adjourned he begged to move a resolution, that the writer of each paper should be supplied with 20 copies of the printed quarterly reports gratis. Every writer of a paper had, as a rule, a good many friends, and they were anxious to see his productions. When he (Mr. Cox) read a paper before the Institute, he had to buy a number of reports for his friends, and he had no doubt others had to do the same. Generally there were three papers in each quarterly report, and it might be argued that to give away 60 copies would involve the Institute in considerable expense.

The Secretary remarked that once the report was in type, the cost of 60 extra copies would be comparatively small.—Mr. Cox added that the great labour involved in writing a paper, to be read before the Institute, fully entitled the writer to at least 20 copies.—Mr. BASSETT endorsed what Mr. Cox had said, and seconded the proposal. Mr. BEDLINGTON considered 20 copies too large a number. Originally he had an idea of moving that it should be 6, but he was willing to extend it to 10. He moved an amendment to that effect.—Mr. DYNE STEEL seconded the amendment.—The President, in putting the question to the meeting, said he trusted they would deal liberally with what was a paper of sufficient merit.

The proposition of Mr. Cox was carried by a large majority.

MATHER AND PLATT'S BORING MACHINE.

The members then adjourned to Messrs. North and Lowe's premises, where this machine was at work. After returning to the Assembly Rooms, Mr. Bassett announced that Mr. Platt was present, and he had kindly consented to render any explanation as to the working of the machine. In reply to questions from Mr. Bedlington, Mr. Bassett, Mr. George Brown, Mr. Dyne Steel, and other members,

Mr. PLATT said the bore hole at Messrs. North and Lowe's was 18 in. in diameter. The machine commenced working on the 24th of April, and the average sinking until they arrived at a depth of 200 feet, where they struck water, was 27 feet 8½ inch. per week. The cost of the machine was about 600l., and their usual practice was to let them out on hire, the charge being 6l. per week, the whole of the boring apparatus being included. They had bored to various depths in Lancashire and the North of England; in some instances they had gone down 1300 feet. He had made a calculation of all the holes that they had bored, and he found that the average cost was 19s. 4½d. per foot, the bore being generally 18 in. in diameter. This included every charge connected with the boring, with the exception of the fuel for the engine.

Mr. BASSETT enquired whether it was not necessary to lay down tubes, and if such were the case the diameter of the bore-hole would lessen as they went down?—Mr. PLATT replied that they rarely found it necessary to insert tubes, except when they passed through gravelly or some such loose

strata. At Middlesbrough they put down a tube, the diameter being 18 in. throughout.

Mr. T. F. BROWN would like to know the practical limit of the diameter of the bore-hole.—Mr. PLATT said they had bored as much as 4 ft. in diameter.—Mr. T. F. BROWN: Does the cost increase in proportion?—Mr. PLATT replied that it did not. A 4-ft. hole could be bored for considerably less than twice the expense of a 2-ft. hole.

Mr. DYNE STEEL asked if it was practicable to go beyond the 4 feet? He believed the members would be glad to have Mr. Platt's opinion on this point, in order that they might judge whether the machine could be applied to sinking colliery shafts?—Mr. PLATT said, if he were consulted professionally, he would not be afraid to undertake the sinking of a shaft of 18 to 20 ft. in diameter, but not as one bore-hole. He considered that 4 feet was the practical limit to one bore-hole, and if a larger diameter was required he should sink several holes.

Mr. BASSETT remarked that he must plead guilty of having induced Mr. Platt to attend the meeting, for he considered the subject was of great importance. He thought the machine was a great success so far, and he had no doubt that in time it would be extensively adopted in South Wales. He had great pleasure in moving a vote of thanks to Mr. Platt, for his kindness in showing them the machine at work, and in attending the meeting to render the important information they had gleaned from him. (Applause.) A vote of thanks was unanimously agreed to.

THE CAERPHILLY MINERAL DISTRICT.

BY MR. T. FORSTER BROWN.

The district does not differ in any great degree from many of similar extent in the South Wales coal field, either in the thickness of the coal seams, the quality of the minerals, or in the various dislocations of its coal measures, but the extensive area and great aggregate thickness of the lower veins sufficiently prove the importance of the locality; moreover, the operations now in progress for the working of the Maesmawr vein indicate the immediate proximity of the neighbourhood as a household coal field. Up to a late period there has been a deficiency in railway accommodation, but the Rhymney Railway, the subsequent formation of the Caerphilly branch of the old Rhymney, and the probable completion at an early date of the railways authorised during the last session of Parliament, will afford facilities for the transmission of the minerals to the ports of Cardiff, Penarth, and Newport, besides communicating with inland markets.

The coal field under consideration is bounded on the north-east by the rivers Ebbw and Sirhowy, on the south-east and south by the outcrop of the carboniferous series, on the west by the valley of the River Taff, and on the north-west and north by the main anticlinal ridge, which, commencing north-east of Risca, passes through the South Wales coal field in a westward direction, dividing the upper series of coal measures into two independent deposits. The southern outcrop of the carboniferous formation is defined upon the surface by a range of hills running in a direction nearly due west, intersected at intervals by the rivers Ebbw, Rhymney, and Taff. Between these rivers the lower coal measures and the mountain limestone attain a considerable elevation above the level of the adjacent country, ranging from 900 feet above the level of the sea upon Maesmawr Mountain, to an average of 500 feet along the ridge of hills extending from the village of Machen to the River Taff. The Old Red Sandstone formation rests at the southern base of this range of hills. North of the southern outcrop runs a breadth of ground, which round the base of the hills, is the Valley of Caerphilly, and a range of high land upon the line of the anticlinal range nearly parallel to the Caerphilly Valley, but also intersected by the rivers already alluded to.

The sinking of shafts through the stratum of sand and gravel, containing large water-worn boulders of pebbles, which overlies the carboniferous formation to the average thickness of about 20 yards, is attended with some difficulty, in consequence of the running of the sand, and the opening of the upper series has, probably, been delayed from this cause.

The strata of the coal measures lie immediately beneath the gravel, and they attain their greatest thickness in the neighbourhood of Caerphilly, where the Rhos Lantwit Colliery is situated. At the depth of 22 yards, in the Rhos Pit, a vein of coal was intersected. The roof was mild clift, with ironstone bands. The seam was composed of (tender, and burning to a red ash), 1 ft. 10 in.; soft clod, 1 ft. 6 in.; and coal same as top coal, 1 ft. 6 in.; the floor—coal shavings, with vegetable impressions for 6 yards, and 6 inches of coal beneath. This seam is possibly identical with the No. 1 vein at the Lantwit Colliery.

At a depth of 155 yards below the surface the Bedwas or Maesmawr was reached, with a hard stratum of close-grained blue pennant stone, 13 yards in thickness, lying immediately upon the coal, and the average section of this seam at the Rhos Colliery was—Clod, 9 ft. 1 in.; soft coal, 10 ft. 8 in.; hard coal, 0 ft. 4 in.; parting, 0 ft. 9 in.; hard coal, 9 ft. 10 in.; parting, 0 ft. 9 in.; hard coal, 2 ft. 2 in.—1 ft. 4 in. of good coal. The floor was hard fire-clay, 11 inches. The roof of the vein is unusually strong, and no fire-damp has been observed in the workings. The soft coal of 8 inches at the top is kivered out, and is used for engine coal; the remainder of the seam produces a superior household and gas coal (hard to cut and cubical in fracture), which bears exposure to the atmosphere. At the Rhos Colliery the dip of the measures is to the north at the rate of 1 in 15; at the southern outcrop of this seam the dip is 1 in 3; and upon the northern side of the basin the inclination is 1 in 4, dipping south. The water level direction is nearly due east and west.

In consequence of the Bedwas vein possessing so strong a roof, nearly any system of working can be prosecuted with success; the pillar and stall method has been adopted in the collieries hitherto opened, but the coal being so hard it is probable that coal-cutting machinery can be applied in these collieries to advantage; the introduction of machinery would involve a change in the system of working from pillar and stall to that of long work. The total area of coal in this vein is not extensive, and that to the north the outcrop ranges considerably south of the line of the anticlinal; the disconnection from the northern basin which thus arises has created some local discussion as to the identity of the Bedwas vein with the top coal of the Mynyddysylwyn vein; the fact, however, of the whole of the pennant stone, with the exception of the beds immediately upon the coal lying below the Bedwas seam is to the writer's satisfactory proof that the two seams lie in the same relative position in the coal measures. Moreover, there is a thin vein of coal 13 yards below the Bedwas vein, 12 to 18 in. in thickness, which probably indicates the position of the Mynyddysylwyn bottom coal.

The Lantwit vein, worked in Glamorganshire, would also appear to be a continuation of the Bedwas vein westward, but the faults or dislocations crossing the coal formation about the valley of the River Taff create a difficulty in tracing the direct connection with a sufficient amount of accuracy. The quality of the coal produced from the Bedwas vein is, however, very similar to that worked in the Lantwit Colliery. A large proportion of the area containing this seam is now under lease, and it is probable that for the next quarter of a century the bulk of the best household coal to be worked east of the River Taff will be obtained from this district. The coal measures, for a distance of 250 yards below the Bedwas vein, are to a great extent unworked; but at a further depth below the surface of 200 yards Mr. Brown is of opinion that a vein will be reached representing the position of the Brithdir or Tillery of the northern basin. A seam of coal has been worked of a thickness of 3 ft., which crops out below the principal beds of the pennant along the western side of the Sirhowy Valley, near the nine-mile point of the Monmouthshire Railway, and is, probably, the Brithdir seam. It is stated that the quality of the coal worked from the Three-foot vein in the Sirhowy Valley in past years was good, but the general character of the Brithdir coal in the Caerphilly district has, unquestionably, yet to be ascertained. The coal produced from the Brithdir seam is in great request for coking and manufacturing purposes; it is, consequently, of some importance to ascertain if the district under consideration contains a seam of equal value yet unworked.

Passing downwards from the position of the Brithdir, a thin vein of coal, 21 inches in thickness, may be observed cropping out in the Sirhowy Valley, 35 yards below the Three-foot vein above alluded to. The coal of the Little Rock vein is variable in thickness, but is, however, very similar to that worked in the Sirhowy Valley in past years. It has been worked extensively at Pentreby, where the thickness is stated to be 3 ft., with a strong rock roof. Good coal, 2 ft. 4 in.; parting, 0 ft. 9 in.; bottom coal, 2 ft. 7 in.—4 ft. 11 in. At Rudry, where the rock is clift, the section is—Coal, 2 feet 4 in.; parting, 1 ft. 8 in.; coal, 11 in.; total coal, 3 ft. 3 in. East of Rudry this coal disappears entirely as a workable seam. The Rock vein lies at a depth of 22 yards below the Little Rock vein, below the White Rock coal at the Pentreby Works, and within a perpendicular distance of 36 yards, there are four veins, two of 2 ft. and two of 3 ft. thickness of coal, all of which have been worked. The only corresponding veins at the Van Colliery are the Van Colliery seam, which is 6 ft. in thickness, and the Lower Yard coal, which is likewise 3 ft. in thickness. Eastward of the Van Colliery there are no known workable seams between the Rock vein and the Red vein. The Big vein of the Risca and Machen Collieries is the next important vein in descending order. The average section at Machen Colliery, where the roof is strong dark shale, is—Red vein, 1 ft. 4 in.; soft rubbish, 10 in.; grey limestone, 7 in.; grey vein coal, 1 ft. 4 in.; soft rubbish, 2 ft.; Big vein coal, 8 ft. The section of the measures at Pentreby, from the Lymog vein to the supposed Black vein, shows—Lymog vein coal (probably the Red vein), 4 ft. 6 in.; Intervening strata, 13 yds.; Upper Yard coal (probably part of Grey vein), 2 ft. 8 in.; Intervening strata, 7 yds.; Lower Yard coal (part of Grey vein), 3 ft.; Intervening strata, 40 yds.; Black vein coal (probably Big vein), 5 ft.; Intervening strata, 8 yds.; Wing vein (supposed to be the Black vein), 5 ft.

The Black vein, lying 17 yards below the Big vein at Machen and Risca, is celebrated as a steam coal, from its high evaporative power and capacity of bearing exposure to the atmosphere of warm climates with but slight deterioration in quality. The thickness of this seam at Risca is about 8 ft., at Machen 3 ft. 5 in., at the Van 8 ft., and at Pentreby 5 ft. The coal is generally hard and good throughout all the explorations hitherto made, but the roof and floor being soft, the working charges are high. The cost also throws off considerable quantities of carbonated hydrogen, and is subject to blowers of that gas. It will be within the recollection of the members of this Institute that it was in the workings of this seam where the lamentable explosion occurred at the Risca Colliery in the year 1860. The mode of working is by pillar and stall. The quantity of timber required for the support of the roof being considerable, and the general expenses consequently being heavy, it requires the produce of large quantities to attain a profitable result by the working of this vein. The Forked vein, 16 yards below the Black vein has only been partially explored; the coal is good in quality, but the roof is very bad. The Brass vein, lying 36 yards below the Black vein, averages 4 ft. in thickness. The roof is a strong clift, but the coal is inferior in quality, and contains iron pyrites, which materially injures its sale for mercantile purposes. The Hard vein, which lies 5 yards below the Brass vein, has a strong roof, but the average thickness of the coal is not more than 24 in.; the quality is good, but it is rather too quick in combustion. A valuable bed of fire-clay, 4 ft. in thickness, lies also immediately below this vein. The San vein, 65 yards below the Hard vein, is the only remaining seam of importance between the Hard vein and the millstone grit. This coal has been worked at Risca and Machen Collieries, and produces a good second-rate house coal; the roof is strong, but the coal is variable in thickness, and subject to nips out, very similar in character to those referred to as affecting the Rock vein coal.

The mountain limestone attains an average thickness of about 500 yards, with an inclination of 1 in 2 at the outcrop. It is very compact, and highly coloured in the partings with oxide of iron. There are indications of a deposit of hematite iron ore at the top, and also below the limestone at various points upon the surface, between the Rivers Rhymney and Taff; but, in consequence of the compact nature of the limestone, it is not probable that any very important deposit of this ore will be proved to exist in the district. Leads veins also pervade the limestone, from some of which, near Rudry, considerable quantities of galena are said to have been obtained. Lead veins are generally considered, however, to be more productive where the inclination of the strata is gentle, and beneath a certain regular thickness of superincumbent strata. These conditions cannot be realised for any great distance in the lead veins of the limestone in this locality, and the writer is, therefore, not prepared to attach much importance to the deposits of lead ore.

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Mr. BEDLINGTON said the paper was of great interest and value, for it enabled them, to a great extent, to identify the veins with the measures of other districts. The Ras Ras, in the northern basin; the Black vein, at Machen; and the 9-Foot, at Aberdare; he considered to be identical veins. The measures above and below followed in nearly the same order as in the Caerphilly, excepting that each basin had its peculiarities and variations of thickness.

Mr. BROWN remarked that the disparity in the thickness of the Black vein, at Machen, as compared with other localities, arose through the fault. There was some doubt as to the identity of the Elled vein, in the northern basin, with the Black vein. He found that the aggregate thickness of the coal measures at Machen was 30 feet; Van, 53 ft.; Pentreby, 66 ft.; Bridgend and Pyle about 100 ft. The further they went westward it appeared that the aggregate thickness gradually increased.

Mr. BEDLINGTON said it seemed to him that the Red and Grey veins constituted the upper 4 ft. in the northern basin, and the Big vein would be the Three-quarter. In the northern basin there was from 25 to 30 yards from the Three-quarter to the Elled, and consequently he came to the conclusion that the Elled could be none other than the Black vein at Machen and Risca. The thickness of the coal measures in the northern basin decreased to the east, and increased to the west. He added that the Elled was a most irregular vein, and, therefore, it was very difficult to clearly identify it with the measures of other basins.

Mr. DYNE STEEL remarked that he too had some doubt as to the corresponding vein of the Elled. He wished to know if it was clearly ascertained that the Maesmawr referred to in the paper was identical with the Mynyddysylwyn?

Mr. BROWN said he could not adduce more reasons than were contained in his paper as to the connection of the Maesmawr with the Mynyddysylwyn. Mr. BIRBECK said the total thickness of workable coal at Tondur, Glamorganshire, was 76 ft.; at Pyle, it was 9 or 10 ft. more. The veins at Pyle and Morfa were about one-third thicker.

In reply to Mr. Brown, Mr. BIRBECK said the pennant rock was below the Bettws veins at Tondur.—Mr. BROWN said he certainly thought, then, that the Bettws corresponded with the Lantwit.

Mr. DAVID THOMAS, Cwmavon, said the Brithdir, as far as he could judge, was identical with the Tormynydd at Cwmavon, and the Maesmawr with the Wernysfrytyll.

Mr. BASSETT enquired of Mr. Brain what had been his experience in sinking at Llantrissant?—Mr. BRAIN said the thickness of the coal measures they had passed through as yet was somewhere about 25 feet, but they had not gone down far. The strata differed considerably with that at Pyle.—A vote of thanks was unanimously accorded to Mr. Brown for his valuable paper.

ON THE TUBBING OF SHAFTS.

BY MR. EDWARD HEDLEY.

The tubing of shafts is becoming a very important branch of mining, and its application more momentous than formerly. Collieries and other mines of great depth will hereafter be sunk as those now in work are exhausted; these will either be in new undrained districts, or through the mines already worked to others below; in each case large feeders of water will have to be pumped or tubbed back. With all the best appliances of modern science and engineering skill, the cost of pumping a large body of water from a considerable depth is a heavy expense in the working charges of a colliery; wherever it is practical the water met with in sinking should be tubbed out of the shaft, leaving only the water required to the working seam to be raised to the surface. Very frequently large bodies of water, and the natural water springs of the surface, had been drained by shafts being sunk in their vicinity, entailing heavy cost in pumping, as well as in lawsuits for damage and injury to the surface proprietors. In such cases the stopping back of the water becomes an absolute necessity. Where it is necessary to sink through loose strata impregnated with water—such as gravel, quicksand, &c.—it can only be safely and successfully accomplished by means of tubing.

The first method of tubing used in the English coal mines was that called "Plink Tubbing," which was generally adopted in the mines of Durham and Northumberland towards the end of the last century. The shaft is sunk through the strata containing water, and so far into an impermeable bed as is necessary to secure a good foundation for the wedging-curb. The shaft is sunk a few yards further for a sump from which the pumps may take the water—in sinking this sump the use of powder ought to be avoided, as it tends to shake and injure the curb foundation and the shaft side immediately contiguous. The seat, or foundation, is then cut and dressed perfectly level and smooth round the side of the shaft, the surface covered with flannel, saturated with tar or other soft yielding substance, upon which is laid the wedging-curb, of good sound oak, 9 in. square, cut to the circle of the shaft, and in such lengths as are most convenient, usually 4 feet. Between each joint of the curb a thin sheeting of dry white deal is inserted. The curb being thus a, b, c, d, and e, to the centre line of the shaft, the process of wedging commences—all the space between the back of the curb and the solid stratum around the shaft is filled in with blocks of wood, the end of the grain being presented upwards; these blocks are then wedged with hard dry pine wedges until another wedge cannot be inserted. The object being to make the curb water-tight, so that no water can possibly find its way down the shaft behind the curb. Until the wedging is all completed the water running down the sides of the shaft should be caught above, and the curb and wedges preserved as dry as possible. If necessary, the curb joints, with the sheeting between them, should be wedged; this, however, is seldom necessary, as the tendency of the back wedging is to tighten them. Above the wedging-curb, and at a distance equal to the length of the tubing-plank, is fixed the spiking-curb, set true and securely wedged with the double wedges. On the inside of this curb planks are arranged, 3 in. thick, 6 in. wide, and 10 ft. long. The joint edges are all planed and bevelled to the circle of the shaft, so as to form a water-tight barrel or casing; the upper ends are spiked to the curb with iron nails or plus-copper nails have, however, been used in preference where the water corroded the iron. The curbs of oak, 6 in. square, with splices joints, are next fixed inside the planks to strengthen and support them—indeed, the main strength of the tubing is due to these curbs, being each secured by lengths of tubing thus constructed succeed one another until the whole of the wet strata are passed, the top of the highest length is surmounted by another wedging-curb, made water-tight in the same way as the one at the bottom. The ordinary walling of the shaft is built upon this upper curb. On the inside of the inner, or counter-curbs, 1-in. boards are nailed to complete the shaft ready for work. Plank tubing thus constructed has stood for several years under a pressure of about 100 lbs. on the square inch, but the decay of the wood, induced by the corrosive action of the water on the tubing-spikes, has in many cases weakened the tubing, and the shaft has been replaced by the modern cast-iron segment. A modification of the plank tubing is frequently used with great advantage in sinking through wet alluvial strata.

The trouble, expense, and insecurity of the plank tubing led to the use of solid wood in place of the planks. The preparatory operation of laying foundation curb, &c., for this tubing is in every way similar to that already described for plank tubing. Upon the curb is built the blocks or curb cut to the circle of the shaft, and of oak or elm 8 in. square, and of any convenient length. Sheetings of ½-in. deals is inserted in every joint, in all cases the end of the grain of the wood being towards the inside of the shaft. To steady the building as it progresses the space behind the curb is filled with sand, or sand, or sales, compressed and made as solid as possible. The shaft is thus lined above the highest point to which the water will rise, and the shaft walling built upon it. The whole of the joints in the tubing are then wedged until the shaft is quite dry. In several of the continental coal mines a modification of this system of tubing is still employed with great success. Instead, however, of the shafts being circular, they are usually a polygonal form—the tubing blocks being straight, with the joints bevelled to the radii of the shaft. All the joints are sheeted, as in the English method, the vertical joints are, however, in the same line, being each secured by the polygon. Solid wood sheeting, properly constructed, is of good sound, hard wood, will last for many years, and resist a pressure of from 300 to 350 lbs. per square inch. In shafts, where the pressure of water is inconsiderable, and the diameter does not exceed 8 or 10 feet, wood tubing may be still used with more advantage than cast-iron, especially in upcast shafts, where the gases from the furnace act upon the iron, and where the water tubbed back is also destructive to the iron.

At the time that plank tubing was being extensively used (1795) experiments were made with a view to the use of cast-iron for tubing shafts. The first attempt was made with cylinders cast 6 feet long, and of the diameter inside the size of the shaft, with flange projecting outwards. These cylinders were placed one above another, and the joints being sheeted, were afterwards well wedged. Great inconvenience was experienced in getting these cylinders into their place, owing to the obstruction of pumps, &c., it was also found almost impossible to cast them sound and true. Within the last 50 years several large shafts have, however, been sunk through wet alluvial strata successfully by a sinking tub formed of cylinders of great weight, which descended by their gravity as the sand, gravel, &c., were removed from the interior. When employed in this way the flanges of the cylinders project inwardly. The disadvantages attending the use of these large cylinders led to the dividing them into segments, the first castings of which were made with the flange projecting towards the centre, and were bolted together when in their proper position in the shaft. Wood curbs were fastened to the tubing flanges, and sheeting-nails to them to finish the shaft safe for drawing coal, in the same way as in the lining for plank tubing. This rendered cast-iron tubing very costly, and in several cases solid wood tubing was used at this period as a cheaper and sufficiently strong casing. A few years later, however, the present ordinary form of cast-iron segments was introduced by the late Mr. John Buddle, at Howdon Colliery, near North Shields.

In the Rhinny-Fraser mine, where the pressure of water is not great, the shafts are frequently cased or tubbed by a wall of cement blocks of about 2 feet in thickness, and set with hydraulic mortar. This cement is manufactured from trans—a conglomerate of pumice-stone, basalt, and calcined slate—as also is the mortar in the proportion of equal quantities of cement and quick lime. A few years ago an attempt was made to introduce cement tubing in the English mines, but it was found to be impracticable to use it in deep shafts of large diameter, owing to the great thickness of walling required to resist the pressure, and its liability to destruction by the furnace gases. With a few minor exceptions, the former plan of shaft tubing have all been superseded by the present system of tubing with cast-iron, the strength, durability, and efficiency fully compensate for its extra cost in construction, and when the feeders of water are strong, and the column heavy, no other than cast-iron tubing can be applied with success.

NEW PAPERS.

The following papers were read, and will be discussed at next meeting:—
"On a New Mining and Land Surveying Theodolite," by Mr. H. D. Hoskold, M.E.

"On an Equilibrium Slide Valve for Steam-Engines," by Mr. W. Howe.

The members afterwards dined together at the Angel Hotel, under the

They intend to sink another pit, and it is estimated that the company will ultimately be able to raise 1000 tons per diem, and employ 800 colliers. Great praise is due to Mr. Wars, one of the respected and worthy proprietors and sole managers, to whose skill, exertion, and perseverance the present great success is attributable. It was hoped Mr. Wars will still persevere. He has gone towards the property of the company than any other individual hitherto connected with the colliery. I cannot fail to mention the name of Mr. John Jones, the resident agent, whose practical knowledge in coal mining has gained for him the unbounded confidence of the company, and whose credit is due to him for his zeal and tact in the management and guidance of the workmen, and the very high opinion they hold of his services.

THE TREDEGAR COLLIERY EXPLOSION.—At the inquest held on the 26 bodies killed by this explosion a verdict of "Man slaughter" was returned against Mr. Bevan, the manager. There were 16 on the jury; 12, it was stated, agreed to the verdict recorded, three wished to include the persons and the fireman as they were equally to blame, and one dissented altogether, being of opinion that the explosion was a pure accident. Since then a strong feeling has been expressed by the soldiers in favour of Mr. Bevan, with whom he is very popular, and five out of the 12 jurymen that were understood to have agreed to a verdict of "Man slaughter" have declared that they signed the document which was handed down to them without for a moment thinking that the verdict incriminated Mr. Bevan to the extent it did. An indignation meeting is to be held at Tredegar this (Thursday) evening in order to protest against the verdict returned.

THE EXPLOSION AT NEW BEDWELLY PIT, TREDEGAR

In last week's *Mining Journal* a brief report was given of the proceedings before the Coroner, and we now subjoin an abstract of the principal evidence taken—Mr. Brough's evidence raising several interesting scientific points, such as the diffusion of gases, &c., which might be very profitably discussed. Mr. Lionel Brough, the Government Inspector of Coal Mines for the district, deposed that his first investigation after the calamity was on the Saturday morning. The following week he made further inspections, and was now enabled to give evidence on the subject. There are two shafts on the Big Vein in the Bodewy Colliery—each about 260 yards in depth, and of large dimensions (16 ft. by 11 ft.), and situated at about 17 yards from each other. Then, again, there are two shafts at Ty Tyst, of similar sections, and in close communication with the Bodewy, so that the means of ventilation and of escape are most abundant. The intake-level is of horse-road size, as is also that for the return. They are of sufficient dimensions for sound ventilation, and the cross-headings as cross-roads are not behind hand in that particular. He never had occasion to find fault with the quantity of air in this colliery (which he had often visited), neither did he allege that there was any deficiency on the morning of the explosion. He was, the witness, of opinion that the catastrophe was due to the presence of a large quantity

proper areas underground to produce a safe and adequate supply of air for the miners. Contributions to want of power and gas that fired was that which was lying in the upper part of Rothley's cross-hole, and the explosion occurred either at the intersection of the upper or main cross-hole with that heading, or at the mouth of the little cross-hole, a few yards westward from the main cross-hole. The explosion was most likely at the latter place. A natural law with which physicists are familiar, but unfortunately not so well known to the general run of colliery managers, occasionally causes a violent explosion, and may possibly have done so in the case now under notice. The diffusion of gases, which is not a chemical combination, but simply a mechanical mixture of two or more aeriform fluids, is in the underground quietude of the night, and consequent freedom from motion, there is a great opportunity for this propensity to exercise itself, and it is remarkable that man can breathe and the fire-damp that is permitted to stagnate underground possess the very attributes of diffusion, and that in a high degree, on account of the great difference

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ing by not getting the inflammable gas out, especially as the rule requires that the inflammable gas shall be rendered harmless, not only in the working places and levels, but also in the travelling roads to and from such working places. Now, it is evident that the travelling roads were not being rendered harmless, and the cross-holes were really not travelling roads or approaches to where the men worked, but were holes in the rock kept free from danger. He also considered that the third general rule was designed for that morning: it demands that "whenever safety-lamps are required to be used, they shall be first examined and securely locked by a person or persons duly authorized for this purpose." Now, had it been done that morning, David Jones and his boy would not have been able to fire the gas, and so would have escaped, and with them, of course, the other men. The chairman said that he was not aware that, as regards the main rule, the exception of particular lamps had been considered, and he was not aware that

Jones. None whatever was given to his son, who, therefore, would most likely have had with him a candle or small open oil lamp, such as colliers often work with in his own very mines;—hence, in all human probability, the means whereby the gas was ignited. If the lampman had given a looked lamp to the father, and another in his name, he would securely look to the son, he repeated his opinion that the calamity would not have occurred, and that the father and son would have been in the hands of a man who would have been glad to be deploring people's stupidity when they were very hard on the protection of locked safety-lamps. Jones and his son had commenced work in their own cross-hole on Friday morning, with the view to take down some coal in order to make a good travelling road; but to effect this with greater ease and facility to themselves they had actually taken down the door that turned the wind up the Ebbw Vale

Reading. This unfortunate blast almost instantaneously cut out all chances of rescue, and the men were left in a condition of utter helplessness. The door was not removed until Friday morning. Most likely there was some gas in the room before the door was removed, but with that we have nothing to do, as the loss of the door itself is abundantly sufficient to account for the rapid accumulation of 50 or 60 years of the most explosive description of gas we know of underground. That door should have been taken from its place until the collars were out of the pit, and everything got in readiness for the removal of the gas. Moreover, as soon as it was removed, the men were not taken out, and the door was not removed. It is in evidence that the presence of a large body of explosive mixture, the removal of the door, and other circumstances of the case, were all well known, inasmuch as consultations had been held relative thereto. It is, then, the more to be regretted that instead of wait-

until Saturday night they did not at once take the men out of the work, and afterwards free the fire-damp from Robert's cross-heading. There can remain no doubt that the explosion was caused by the lighting of a cigarette or the firing of a gun. It is, therefore, a matter of grave concern to the general public that the owners, as well as the managers, are held liable by the Act of Parliament, 23 and 24 Vict., c. 151. He repeated that the colliery did not explode on account of its incapacity to supply itself with abundant fresh air, but from the absence of the precautions pointed out in the said general rules. The barrier or partition between the roadway and the underground workings is often so slight and frail in construction that it may lead to terrible calamities; even a momentary forgetfulness on the part of the miners could result in the loss of many valuable lives.

The record by Mr. Brunsh, and denied by the representative of the colliery, is

the safety-lamps used should have been locked, although the colliery was not required to be worked exclusively with safety-lamps. Mr. James, on behalf of the manager, maintained that unless the lamps were used by compulsion they were not "required," and that the Act was not intended to apply to cases where the manager had the meaning of the Act, that the lamps need not then be locked, and that he and them had the undoubted right to open the lamps, and to use them with it, first or second class. Mr. Brough said that he would interpret the Act. Another question raised was whether a travelling road, and what is a working road? Mr. James maintained that there are travelling roads and working places, with intervals between them, in which accidents may happen without the colliery officials being made responsible for them, and Mr. Brough combatted this view. It appears that it was not one of the objects of the Act to require the use of safety-lamps in the colliery, and in the additional extra-parliamentary places that some of the bodies were in the colliery, and in the travelling road, to Mr. James's opinion.

Mynoldyswain Ritz, and three other people. The safety-latches were closed because the men "wanted" them, not because they were afraid.

"At the conclusion of the evidence the Coroner briefly summed up, reviewing some portion of the evidence, and, referring to the difference of opinion between Brough and Mr. James as to the rule relating to the locked safety-latches, instructed the jury that it was for them to determine whether the Government Inspector who testified against being influenced by out-of-door conversation and reminding them that the jurors were sworn to give their verdict in accordance with the evidence. The jury after a few minutes returned the verdict—"Gross neglect of Mr. Bevan in not seeing that the door being replaced, and the men turned out of the pit for so doing; gross negligence on the part of the Government Inspector in not seeing that he had himself done so was the cause of the explosion and the death of David Jones and others." This being equivalent to a verdict of "Manslaughter," Bevan was committed for trial at the next Assizes.

CLEVELAND IRON.—Aspiring candidates for parliamentary honors have in the reports of the iron markets generally very good evidence of the briskness of that branch of manufacture under the present Government, whether to the said Government it be owing or not, on which point Conservatives and Liberals may differ. In none of the iron-producing districts is prosperity more notable than in that of Cleveland. Trade is brisk, the workmen appear contented, and there seems every reason to expect that the present state of things will continue for some time. Prices of the week show little difference from those of the last. Stocks are not so low as they were, and the difference having been great, the shipments from Middlesex¹ extensive, and the quantities now on rail been large. New furnaces are being pushed rapidly forward, and there appears every likelihood that in this district both mining and manufacturing operations will rapidly extended.

STATE OF THE HEAST-FURNACES OF			In.	Out.	Total.
Place and owners.					
Easton—Bokelov, Vaughan, and Co. (Limited) ..	6	9	—	—	9
" Clay-Jane Company ..	6	—	1	—	6
" South Bay Company ..	3	—	—	—	3
Cargo Fleet—Jones, Dunning, and Co.	3	—	—	—	3
" ..	4	—	—	—	4
" ..	3	—	—	—	3
" ..	3	—	—	—	3
" ..	3	—	—	—	3
Middleasbro—Bokelov, Vaughan, and Co. (Lim.) ..	2	—	—	—	2
" ..	6	—	—	—	6
" ..	3	—	—	—	3
Port Clarence—Bell Brothers ..	3	—	—	—	3
Norton—Ward, Hesse and Co. (Limited) ..	3	—	—	—	3
Southon—Holden, North and Co.	3	—	—	—	3
Ferryhill—Rosedale Iron Company (Limited) ..	3	—	—	—	3
Newport—B. Samuelson ..	3	—	—	—	3
Thornaby—W. Whitwell and Co.	3	—	—	—	3
Darlington—South Durham Co.	4	—	—	—	4
Willton Park—Bokelov, Vaughan, and Co. (Lim.) ..	0	—	1	—	1
Stanhope—Weardale Iron Company (Limited) ..	4	—	—	—	4
Towlaw—Wearside Iron Company ..	6	—	12	—	18
Consett—Derwent Iron Company (Limited)	6	—	—	—	6
Total ..	74	—	17	—	91

REPORT FROM NORTHUMBERLAND AND DURHAM.

JULY 20.—The Coal and Iron Trades here continue very good. The demand for all kinds of coal and coke is brisk, and for some kinds it is scarcely possible to keep pace with the demand. At present the main lines of coal railways in Northumberland are kept working almost night and day, so great is the demand. Coke makers are also well supplied with orders, and many of the large makers hold contracts which will keep them at work for some time to come.

The Iron Trades quiet, but there is no complaint made of want of orders; on the contrary, all classes of iron makers—cast-iron pipe makers, engine makers, &c.—appear to be fully employed, and the prospect at present appears to be excellent. The demand for men of all kinds—that is, for coal miners, iron workers, masons, &c.—is unprecedented, and, of course, wages are good in proportion. It is to be regretted that the strike at the Cramlington Colliery still continues, with little prospect at present of being speedily adjusted; but the general opinion appears to be that the men will ultimately be obliged to submit to prices, if not precisely the same as those they had previous to the strike, to a scale very little different from the old one. A slight misunderstanding took place at the extensive works of Messrs. Hawks and Co., Gateshead, a few days ago, and some of the puddlers refused to work, but this was speedily adjusted, and all is now going briskly forward, as usual. The Messrs. Hawks, it may be observed, are very highly respected in the district as employers. With the exception of Cramlington, all the men in the district are in full work, and appear to be generally well satisfied with their earnings.

NOTES ON THE MEETING OF THE NORTHERN INSTITUTE
AT MANCHESTER.

The meeting of the Northern Institute, at Manchester, whatever light it is viewed in, whether in its social aspect or its importance with respect to the progress of mining science, has been the most successful meeting of the society ever held. The Lancashire and Cheshire Coal Trade Association gave strangers a welcome of the warmest kind, and the principal coal and ironmasters of the district did the same; but what is of more importance than this, papers were prepared and read by several members of the Manchester district, and also of other districts, on subjects of the very greatest importance; and as the reading of these papers led to long and useful discussions, which could not have been expected to occur at any except an aggregate meeting of this description, the general result can hardly fail to be that a great impetus will be given to practical mining science; and it must not be lost sight of that many of the most important subjects connected with the improvement of mine machinery were brought before the meeting. We give below some cursory remarks on the various questions brought forward.

The paper of Mr. John Knowles "On Direct-Acting Pumping and Winding-Engines," is a most valuable one. Both the engines there described are highly effective, and, on the whole, perhaps, as economical as any similar engines at work in this or any other district. In Northumberland and Durham few good pumping-engines are to be found, as a rule; indeed, they have not been required. And, as the pits are generally of great depth, the greatest attention has been paid, not to the best modes of lifting water, but to the best mode of damming it back, so as to avoid the expense of pumping. There are, however, some good pumping-engines here, and some of them are on the principle shown by Mr. Knowles, and it is worthy of notice that we are shortly to have very large engines erected on this principle at Wallsend, for the purpose of draining the collieries of the Tyne Coal Company; and it says a good deal for this system, that it has been adopted by this company, under the advice of their able engineer, Mr. Easton. With respect to direct-acting winding-engines, there are many of them, but how far they approach in perfection to the one described by Mr. Knowles we are not prepared to say; the largest of the kind was erected some time ago by Mr. Forster, at Delaval. This engine has two cylinders, each 36 in. diameter, and a drum 25 ft. diameter. It is capable of winding 1500 tons of coal per day, and it is, no doubt, one of the largest winding-engines in the world.

It is much to be regretted that the paper of Mr. Aytoun, "On an Improved Mode of Drawing Coal," was not discussed; as, without giving any opinion as to its merits, the ideas of the writer appear to be good, and the whole scheme very ingenious. It will, however, there is no doubt, be taken up at some future time, and thoroughly discussed by the members of the Institute. The most curious points connected with the system of winding are treated by Mr. Aytoun in a masterly manner. The safety-cage is a subject of the very greatest importance in coal mining, and although many descriptions of them have been tried in the North, little progress has yet been made in their use. They have, indeed, in most cases, after being tried for a length of time, been finally discarded. The usual reason given for this has been that the action of the apparatus injured the slides in the usual working of the cage, and it cannot be denied that with most of them a difficulty was felt in so adjusting the apparatus as to prevent such injury when the action of the apparatus was not required. But it is evident, from the discussion on Mr. Marley's paper "On Calow's Safety-Cage," that improvements continue to be made, and there can be little doubt that ultimately such a state of perfection will be reached as to cause the general adoption of safety-cages. The merit of Calow's cage appears to be that the apparatus is not brought into play except in case of accident, and this obviates the main objection we have noticed; so that, if its action is certain in case of accident, there can be no objection left to its general adoption.

[These remarks will be continued in next week's Journal.]

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

JULY 20.—The Iron Trade continues languid. There has been for some time a scarcity of orders for plates, owing to the diminished production of iron ships. The quietness, however, which has prevailed for the last few weeks has not yet seriously affected the works; and it is only with a few branches, and that at a part of the works, that the men begin a day later in the week, owing to the shortness of orders. The meetings at the weekly exchanges at Birmingham and Wolverhampton are thin, and the few who go appear more interested in the discussion of the elections, and the future course of politics, than in making contracts. Pig-iron is not being much sold just now, but most of the makers have considerable deliveries to execute, and prices are without change. When the election fever has quite subsided, and the character of the harvest can be estimated with tolerable certainty, we may probably experience an improvement in the demand. At present the orders for the United States continue a small amount, and it is a mere guess when they may be resumed on the accustomed scale. But it is certain that the industrial organisation of the Southern States can only be restored by the consumption of large quantities of iron, and, therefore, a renewal of the trade may be held to be dependent only on the recovery of confidence, which again depends mainly on the satisfactory adjustment of the finances. The Hardware Trades are, as a whole, dull; the home orders are particularly small, and we must wait until harvest is over. But the agricultural districts send us their usual requisitions for South Staffordshire goods.

For some time past there have been few mining accidents to notice, but this week there are several. At Tipton, a man named Thomas Williams died on Monday last from the effects of burns which he received in the colliery of Mr. John Yardley. He had gone with a naked candle into a part of the mine in which gas was supposed to exist, though all the men had been specially warned of the danger, and the result was an explosion which killed him. At his home, however, a boy 15 years old, working at the Horner Colliery, at Tipton, of Messrs. Dixon and Amphlett, got into a bow, or skip, to descend the shaft on Monday morning, and a man named Bowen was just putting one foot into the skip, when it became detached from the rope, and the boy fell to the bottom, being killed on the spot. Happily the man, though he had put one foot into the skip, had kept his balance with the other, and was saved. He will surely all his life be liable to recall the emotion which he must have withdrawn that foot from the grave. It appeared that the boy could not have been properly hooked, as there was no defect in the hook itself. The duty of the banksman, according to the 15th section of the Colliery Rules, is to examine the tacking of the bow, and again before the bow descends, and is to ascertain that the banksman is ready to haul. Monday morning, however, the man called Bentley did not attend to this duty. By the same section of the rules it was ordered that the banksman should on no pretence leave the top of the pit during the ascending and descending.

The earthenware manufacturers in the Potteries are discovering that the Factories Acts, now adopted there, are not a dead letter. At the Longton Police Court, yesterday, no less than 41 informations laid by the Inspector, Mr. May, came before the stipendiary magistrate, and in a large number fines were inflicted for various instances of neglect to comply with the provisions of the Act. The defendants consisted both of manufacturers and of the parents of children employed.

LIMESTONE QUARRYING IN STAFFORDSHIRE—A GOOD "SHOT."—The immense quarries of limestone belonging to the North Staffordshire Railway Company, and situated at Caudon Low, a few miles from Leek, have been worked for ages, but their authentic history goes no farther back than the construction of the Trent and Mersey Canal. They yield at the present time 20,000 tons a-year, and the stone is conveyed to the Froghall Station, on the Churnet valley line by means of an incline 3 miles long, the gradient of which for one-third of the distance is 1 in 10, and from Froghall it is transported by rail to the same station. The stone is used for the construction of the great viaducts and the ironworks of North and South Staffordshire and Shropshire, for use as a flux in the production of pig-iron. The company pays a royalty of 2d. per ton to the Earl of Shrewsbury.

bury and other landowners, and the profits of the undertaking form an important item in its half-yearly balance-sheets. The quarries at the present time exhibit an imposing escarpment, upwards of 100 ft. high, and several hundred yards long. A considerable proportion of the stone is got by leverage; but every now and then the managers resort to the use of dynamite. The most successful shots ever fired was that of the Tuesday. It took place in the centre of the quarry, and was as follows:—A line of 12 tuns:—At a short distance above the door a lateral gallery, 4 ft. by 3 ft. 6 in., and 41 ft. long, was driven. This was continued vertically to the depth of 17 ft., and again laterally to the length of 7 ft. 6 in. At the end of this last-named branch a chamber was formed, in which the “shot,” consisting of 30 cwt. of powder, was deposited. A Rickford fuse, burning 3 ft. per minute, was used to fire the charge, which after the lapse of about a quarter of an hour exploded with magnificent effect. Simultaneously, several small fires were kindled across the quarry, the subterranean strata were driven out, and the superincumbent mass came crashing down with a terrific roar. As soon as the smoke had cleared away it was found that the charge had taken full effect, and had dislodged at least 14,000 tons.

THE LATE STRIKE IN THE IRON TRADE.—The lamentable results of strikes are forcibly shown by the fact that the loss sustained by workmen in Staffordshire alone during the recent conflict between the masters and their hands is estimated at 500,000*l.*, the loss to the miners being 200,000*l.*, and to the men engaged in the manufacture of iron 300,000*l.* This is known, but there is a vast amount of collateral loss and consequent privation which can never be estimated.

REPORT FROM DERBYSHIRE, YORKSHIRE, AND LANCASHIRE.

JULY 20.—The Iron Trade continues much in the same state as noticed last week. There is an absence of speculative demand, but a steady trade is being done for actual requirements. Many merchants are buying sparingly, but the rates for the best brands are firm, and there are not so many complaints of underselling as is the case during periods of comparative depression. A languid feeling pervades the Coal Trade, and most descriptions of coal are less enquired for than usual. The heat of the weather has done much towards producing this slackness, but the enquiry for other descriptions have fallen off, not only for the London, but the provincial markets. The orders for hard coal for export have not been so numerous, but there is a tolerably good enquiry for home consumption. We have a brisk enquiry for coke, and the consumption keeps up pretty much with the production, though most of our railway companies have ceased to use it for their locomotives. A great quantity is now used by the ale kings at Burton, for maling purposes, and the remainder is worked up in our manufactories.

It is pretty certain that according to the get of ore at the Mill Dam Mine there will be another dividend soon. The next weigh was expected to result in about 70 tons of ore, and the proceeds from the sale of which it was intended to divide amongst the shareholders. It is also believed that the company will be in a position to make a further dividend before the end of the year. Withstanding this, the shares have not materially improved in price, being in the market at par, or a little above. There is a want of confidence between investors and the company. Capital is again wanted in the Peak for lead mining, and some existing companies find it very difficult to go on without calls, which being made when a mine is in progress always have a depressing effect. The El Dorado which a few years ago was the talk of the country, has now almost vanished, and the result is that great caution is exercised by the public before the will of the company is followed. At the present time is advertising for loans, to be made on a guaranteed interest of 12 per cent. A good deal of consternation has been created by the decline in the value of the Manchester, Sheffield, and Lincolnshire stock, and shareholders are advised by many newspaper correspondents to hold on, as the present decline in the traffic and the dividend are only temporary. There has been an immense fall in the returns of excursion boats, all lines, and on many it has not been equal by one-half to the returns of the same period last year. With the exception of the Great Western, and the Great Eastern, slaughter by railway accidents, it is not safe to say, and the companies themselves are at a loss to get at the true cause. The demand for local stocks is good, but we have little or no enquiry for mining shares. Gas and water stocks are held firm.

REPORT FROM MONMOUTH AND SOUTH WALES.

JULY 20.—There is no material change to report in the staple trades of the district. The Iron Trade remains in nearly the same state as last week, with the exception that home buyers appear to be convinced that no reduction in prices can be looked forward to this quarter, and in consequence they are giving out their orders with tolerable freedom. Export houses are doing an average business, and confidence in the revival of the American demand is still unabated. Indian advices are a little more favourable, and it is expected that a decided revival will take place in the eastern trade in the autumn. The Liverpool and Manchester tin-plate houses will not as yet, except in a few instances, enter into transactions at the advance of 2s. per box; and the associated makers, on the other hand, express a determination not to sell at lower prices. For steam coal the export enquiry continues to improve, and the house coal trade remains without change.

It is satisfactory to report that the difficulties which had arisen in reference to the Penydarwen Works have been arranged, and Mr. Fothergill will very shortly commence in earnest to develop the resources of the property. A locomotive road is to be made to connect the Plymouth and Penydarwen Works, which will effect a vast saving in horse and manual labour.

Mr. Vickerman has been engaged for some time in exploring for iron ore at Penally, Pembrokeshire, and on Monday last, in a field adjoining the barracks, the workmen came upon a deposit of ore, the extent and value of which has not yet been clearly ascertained.

MATHER AND PLATT'S ARTESIAN BORING-MACHINE.—One of the machines of Messrs. Mather and Platt, Salford Works, Manchester, has been at work since April last, boring for water, on the premises of Messrs. North and Lowe, brewers, Cardiff. The members of the South Wales Institute of Engineers visited the spot on Wednesday, of which an account will be found in another column, and they expressed themselves highly pleased with the performance of the machine. Boring was commenced on April 24 last, and during the first week attained was 21 ft. 6 in.; second week, 22 ft. 6 in.; third week, 18 ft.; fourth week, 47 ft.; fifth week, 48 ft.; sixth week, 26 ft.; seventh week, 17 ft.; eighth week, 26 ft.; ninth week, 17 ft.; Whitsun week, 4 ft., owing to the engineer being absent on leave and the remaining three weeks, 30 ft.: making a total of 290 ft., and an average sinking of 27 ft. 8 in. per week. Some exceedingly hard strata were gone through, and from the bottom of the hole, at a depth of 230 ft., a quantity of water was obtained, which has been touched at a depth of 270 to 280 ft. After going down 280 ft., an abundance of water was discovered, and as much as 360,000 gallons per 12 hours has been raised of excellent pure water, without any perceptible diminution of the well. Irrespective of the hire of the machine, the only cost has been labour, about 12s. per week, and fuel. The great success which has attended this experiment—the first in South Wales—will very probably lead to the machine being adopted for boring for coal, instead of the present method of sinking shafts. The machine was made and is being used in a practical manner by the South Wales Institute of Engineers, at their meeting in July, 1864, and which was reported in the *Mining Journal* of July 23, 1864.

REACHING THE FOUR-FEET VEIN AT PENTRE COLLIERY, RHONDDA VALLEY.—Many of your readers will be glad to hear of the fortunate event which has taken place in this prosperous locality. About 250 colliers have been employed by the company—Messrs. Greenhill and Ware—since March, 1864, and now they have come down upon the Four-feet vein to the depth of which from the surface is about 198 yards. As to the coal itself, it bears the character of a firm section; in several parts it reaches beyond 4 ft. 6 in., and its quality has been carefully examined, compared, and much approved of: competent judges of the mineral consider it to be identical with the vein universally known as the celebrated Aberdare Four-feet vein, which is second to none in the kingdom. The men are busily at work in another pit, and have sunk a depth of 100 yards, and it is currently rumoured that they will probably penetrate the same stratum in four months' time, and be able to raise 500 tons daily from this pit when in full operation.

STATEMENT OF FURNACE BUILDING.

Madras—Hugues, Lloyd, and Co.	4 nearly ready.
Boston—Boswell and Vaughan	2½ completed.
Fighting Cocks—Middleton Iron Company	2 nearly completed.
Forryhill—Rendall Iron Company (Limited)	4 nearly ready.
Bates—South Bank Company	3 commenced.
Madras—Stevens, Jacques, and Co.	3 commenced.
Newport—Samuelson	2 commenced.
Cargo Fleet—Swan, Straubenzee, and Co.	2 half completed.
Carton—Bastow and Co.	2 nearly completed.
Two Works	2 nearly completed.

—Barrington and Stockton Times.

SILVER.—FROM WHENCE, AND HOW OBTAINED.

We are supplied with silver from two great sources—from true silver ores, and from ores of other metals which are more or less argentiferous. In the first case, the silver is the object of the miner's search, whilst in the latter the silver is a by-product, of less value than the mineral with which it is associated. In nature, however, these two classes are not distinct, for they pass from one into the other by imperceptible gradations; still, practically, in the eyes of the miner and metallurgist, though not in those of the mineralogist, there exists a wide difference, which will become more apparent in the following descriptions of the practical methods of extracting silver from its ores, or from what are termed argentiferous minerals, as those ores of copper and lead which contain a small quantity of silver, but in which the value of the lead or copper exceeds that of the silver, but in which the value of the lead or copper exceeds that of the silver. In England we have no mines of any importance yielding true silver ores, and yet we send a great deal of silver into the market as the production of our mines, all of which is derived from argentiferous lead and copper ores. In Mexico, Chili, and Peru, on the other hand, the greater amount of silver obtained is from silver ores proper. The extraction of silver from a true silver ore is far easier than its extraction from an argentiferous mineral, in which it is necessary not only to separate the silver, but also to keep uninjured the base metal with which it is admixed; and it is not that the supplies of silver ores are daily diminishing, and that it would not be so much attention paid to argentiferous minerals. The great silver districts of Chancarcillo, in Chili, and of Cerro de Pasco, in Peru, will probably never again yield such supplies of this precious metal as formerly, simply because the mines are to a great extent exhausted. This remark applies also to our European silver mines; but how far Mexico, under a well-organised and peaceful Government, may be capable of supplying us with an increasing quantity of silver it is difficult to surmise; it may, however, be estimated that her capacity to do so is great, if circumstances give the opportunity. Still, when we take into account that she is still harassed by war, and consider that however successful her conquerors may be, it will probably years before the Mexicans will become so far reconciled to their new political existence as to devote proper attention to the natural resources of the country, we must not expect a large supply from her mines, and, since, as has been stated, our other resources of silver are becoming exhausted, it may be surmised that the present short supply of silver will not be soon relieved, and that it will be necessary in future to pay greater attention than heretofore to argentiferous ores. Now, as in England we have little to do with the metallurgical treatment of silver ores, since such are treated and the metal extracted therefrom generally in those countries in which they are found, it will be here more interesting to devote attention to the extraction of silver from argentiferous ores rather than to the treatment of true silver ores. At the same time, a short sketch of the nature and character of the more common ores of silver, as also of the modes of treating them, will add interest to the subject, and assist in the explanation of the more approved methods of treating argentiferous minerals.

Metallic silver is not uncommonly found in Nature. It melts at a lower temperature than either copper or gold, and has, when melted, the curious property of absorbing oxygen from the air, which it, however, again gives up on cooling. It is the escape of this oxygen which causes that spitting which accompanies the solidifying of pure silver. This property is a characteristic of pure silver alone, for if there be 1 or 2 per cent. of copper alloyed with the silver it never spits on cooling.

The only two ores of silver of any commercial importance are the sulphuret of silver, and that class of ores known as ruby silver, and which may be a combination of silver with arsenic or antimony. Sulphuret of silver, when pure, contains about 86 per cent. of silver, and is the chief ore of Mexico, Peru, and Hungary. Ruby silver, when pure, contains about 60 per cent. of silver, and is the chief silver ore of Saxony and of Chancarcillo, in Chili. Besides these, there are several less important ores of silver, as the chloride and bromide, but they are not common in Nature, and are, therefore, unimportant commercially. Of argentiferous ores the number is very great, and it is impossible here to describe them in detail; but it may be stated that they are, for the most part, combinations of silver with either lead, copper, arsenic, or antimony.

The methods by which silver is separated from its ores, and from argentiferous minerals, are several. Of those for treating silver ores proper, and in which it is desired to collect the silver alone, the principal are—The Mexican method of amalgamation, in patios; the Freiberg method of amalgamation, in barrels; and the Chilean method of fusion. Of those methods of separating silver from argentiferous minerals the chief are—Agustín's process, Zorogel's process, and the numerous devices for dissolving lead ores, including Patinson's process, and the lixiviation process, for separating silver from copper by means of lead. In the following will be found a description of each of these processes, as practised in the different localities where they are in use.

The Mexican method of amalgamation in patios is a very ancient one, having been discovered by a Mexican called Medina, in 1557. By what means it was first found out history does not tell us, but the manner in which it is now practised in Mexico is pretty similar to the manner as when first discovered, and from it has certainly sprung all our present methods of amalgamating silver ores. The ore to be treated in Mexico is an antimonial sulphuret of silver, mixed with bisulphide of iron, &c., and an ore which does not require to be roasted. The operation commences with a rough stamping of the ore, under stamps similar to those in our Cornish tin mines. The coarse sand produced in this stamping is transferred to the grinding-mill, where it is reduced to the state of an impalpable powder. This grinding-mill is composed of a circular enclosure, paved with some hard stone, and surrounded with a water-tight boarding. In the centre of the space stands an upright beam, resting on a pivot; and fixed to this beam are long arms, and from these arms stones of porphyry are attached, resting on the base of the enclosure. Now, water being generally scarce, and steam unknown, the mills are worked by mules, which, walking round the outer circumference of the enclosure, draw the long arms to which the stones are attached. In this way the sand is reduced to an extreme state of fineness, water being added to assist the trituration. When sufficiently ground the liquid mass is baled into large slime-tanks, where the material, or salt, mixed with sulphide of iron, is added. The perfect admixture of the mass is effected by the treading of mules, and after this mixture is slowly added, the whole mass being well trodden by the mules, and thoroughly turned by labourers, between each addition, assays being made as to the progress of the amalgamation continually. After a time, the sulphide of silver will be found to have become decomposed, and the metallic silver set free, and alloyed with the mercury. It takes some weeks to effect this decomposition, and it must not be attempted too rapidly, or a certain amount of both mercury and silver will be lost. Well, the manager being satisfied that the whole of the silver has been absorbed by the mercury, he washes the mud in vats, and collecting the amalgam by the simple assistance of its greater specific gravity, subjects it then to pressure, and so squeezes out the excess of mercury. The remaining mass, which will be a definite amalgam, is subjected to heat, when the mercury is expelled, the metallic silver remaining behind. The loss of silver in the above process is enormous, and is even as much as from 30 to 40 per cent. of the silver contained in the ore. The amount of salt required in the process is about 180 lbs. for every ton of ore, and of mercury about 16 lbs. per ton of ore. The time required for the process will be from 10 to 15 days in the summer, and from 20 to 25 days in the winter. The rationale of the process is, that neither sulphide of silver alone, nor sulphide of silver when mixed with salt—i.e., chloride of sodium—and exposed to the air, will undergo any change; but when the sulphide of iron is present in such an exposed mass, decomposition sets in, and sulphate of iron with chloride of silver is formed, besides other bodies. If metallic mercury be brought into contact with this chloride of silver, it will decompose it, and the mercury and silver will form an amalgam. Sulphide of silver is more readily reduced by mercury than is the chloride of silver, but the effect cannot be produced in the Mexican amalgamation process. In many, in fact in most, of the Mexican silver ores there is some quantity of gold, and where it is sufficient to be worth extracting its separation is effected in the grinding mill by the addition of amalgam. This amalgam, it is found, will pick up the gold more readily than will

pure mercury; and, curiously enough, if the silver is separated from the ore, and the gold remains present until the later stages, they will combine, and form an alloy which cannot be made to combine with the mercury, and is, therefore, lost.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

ST. DAY, JULY 19.—In my last I called attention to the probabilities of a great rise in the value of CLIFFORD AMALGAMATED shares. I omitted to state in the letter that a considerable improvement had taken place in the 30 fm. level at Buzzard's, the importance of which would in ordinary mining times make a great stir in the market; now, however, on the contrary, the shares seem to be, if anything, lower in price. This portion of this great run of mines may be considered quite new, the deepest part being only a little below the 40, and is, moreover, a valuable adjunct to this already rich property; suffice it to say, there is already more ore discovered in this part alone than in some mines I could name selling in the market at a price almost equal to that of Clifford. The new steam-whim and crusher on this part will be at work in a very short time, when they will be better enabled to increase their returns.

I have for some time carefully watched the progress of EAST ROSEWARK, having inspected it in November, 1862. The principal operations were then carried on at Hallett's shaft, which was down 10 fathoms below the 55 fm. level, and under the elvan course, where I had no opinion of any large deposits of ore being found; the lode was also small, but the quality of the ore was very superior to the average of the yellow sulphurets of the county. I made some remarks on the lode at King's shaft, where little or nothing was then being done; the lode was much larger and upon the elvan course, and I considered the probabilities of success far greater than at Hallett's shaft, and that at a deeper level and nearer approach to the elvan good and lasting bunches of ore would be opened up. I am glad to see that this part of the mine is turning out satisfactorily. This has also been one of the neglected mines paying about 25 per cent. interest on the present price of shares.

At NORTH CHIVERTON, I am glad to see parties are beginning to take time by the forelock—a very influential party, taking advantage of the present depressed state of the market, have made a large purchase, and so cleared a great number of shares of the market. The cutting of the lode at the next deeper level will show the policy of this, when I hope to again have the pleasure of referring to it.

At CHIVERTON MOOR they are nearing the grand point of seeing the lode at the 40, and, if we may judge from the fine stones of lead found in the lode, only 4 fms. deep, and on the course of the richest lead-bearing lode in Cornwall, there is not much doubt of the ultimate result of the mine. This, too, will then probably make a great stir in the market, and parties desirous of investing will have to pay a high figure for their shares.—CHARLES BAWDEN.

GREAT WHEAL VOR.—The discoveries being daily made in the deep levels of this mine are exceeding all expectations. The mass of rich metal standing from the 162 and above it, to below the 184, is prodigious. They have a winze sinking below the 162 worth fully 1000*l.* a fathom, and another below the 184 is valued at 250*l.* The 194 will soon open another level, which will add thousands to the value of the mine. The time has arrived when an upward movement in the price of tin may be daily looked for, but without it the dividends must be largely increased, as the reserves are becoming enormous—indeed, at no period has this mine presented such appearances as at the present, or the prospects of a long and prosperous future been as apparent.

HALLENBEAGLE.—The winze on Wheal Rose lode is going down in a good course of ore, and still improving as they sink; and with the course of ore in the various winzes on Reed's lode opening so well there is little doubt about the mine soon being in the Dividend List, as they are now working at a profit. There are several other points of interest coming off where discoveries may be made any day.

At STRAY PARK MINE a most important discovery has been made during the past week—a lode has been met with in the 250 fm. level, worth 45*l.* per fm. Great interest is felt in the neighbourhood, the discovery being considered equal to any made during the present working.

At ROSEWARK CONSOLS the recent change in the management of the mine has had a good effect upon the shareholders, as their confidence is being rapidly re-established, and an enquiry already exists for the shares in the open market. There is no doubt whatever that by patience and perseverance the shareholders will be rewarded for their great outlay, as all the necessary machinery and plant at surface is thoroughly completed, and nothing now remains but to open the mine with the utmost possible speed, with the necessary economy consistent with good mining.

At the Great South Chiverton the works are being pushed forward with every possible dispatch, and it is really quite pleasant to witness the harmony existing amongst the various workmen—masons, carpenters, smiths, engineers, miners, and captains, all vying with each other to complete the same within the time specified by the manager. We understand the proprietors are highly respectable, and that nothing will be left undone to bring the mine into a paying state as speedily as possible, as the right side or parallel lode to the West Chiverton (adjoining mine) fully warrant its speedy development; and the opinions of Capt. Henry James, John Daw, Martin George, W. H. Reynolds, J. Hampton, John George, and John Nancarrow (the indefatigable manager of the mine) that this success is almost certain, from the appearance of the lodes at surface, as to the great richness of the mine when thoroughly developed.

WHEAL ROSE.—Since the meeting (June 20) there has been a most important improvement in the 90, in the eastern end; the lode is now worth from 65*l.* to 70*l.* per fm.; the western end is also greatly improved; the continuance in depth of this great deposit of ore is most important, and proves this to be one of the richest copper mines in Cornwall, and results will now be attained that the most sanguine speculator could scarcely have anticipated. The accounts are now to be held bi-monthly, as dividends will shortly be paid. The continuance of this rich course of ore from the 80 to the 90 most considerably enhance the value of this as well as that of the adjoining mines, Great North Downs on the west and Hallenbeagle on the east, and, in fact, be most important for the whole district.

SOUTH CALLINGTON.—Operations are being pushed on here, and from the appearance of the samples sent up from the mine, it is evident that the indications are very good.

The BEDOL-AUR MINE has during the past few weeks been steadily improving, and may now be considered in a fair way to become a valuable property. It will be seen by the agent's reports that each lode upon which anything is being done is producing large and considerable quantities. The Brynla lode is yielding 1 ton of lead per fathom; the St. Vincent, 6 cwts.; the Golden Shoe, 6 cwts.; and the Coveia Wen, 35 cwts. per fathom. It must be remembered that the mine is, comparatively speaking, only in its infancy, and is but 77 yards at the deepest point from surface. About 1000*l.* only have been expended in opening the shafts and driving cross-cuts, and the company commenced operations within eighteen months of the present time. The property has from time to time been recommended to investors through the medium of the Journal, and no doubt those who have taken Mr. Croft's advice will soon receive handsome returns from their outlay. The produce of the mine, which is chiefly from driving, is sufficient to pay the working cost; and should the lodes hold good, the ground that is being taken away at a profit to the shareholders. The lodes that are at present being worked are principally discoveries of the present proprietors, but the main lodes of the district, which have proved so valuable and productive in the adjoining mines, and for which the Bedol-Aur Company was formed to explore, have not yet been intersected, but it is anticipated that the cross-cut will reach them in the course of a few months. A new shaft is about to be sunk from surface to ventilate the mine, and to improve the mode of raising the ore. However extensive the mines may become, no pumping machinery will be required until the workings are more than 200 yards deep, as the ground is naturally drained to that depth by swallows, or natural fissures.

India Office.

BY ORDER OF THE SECRETARY OF STATE FOR INDIA
IN COUNCIL, notice is hereby given that the DIRECTOR-GENERAL OF STORES FOR INDIA will be ready, on or before Monday, the 31st inst., to RECEIVE PROPOSALS in writing, sealed up, from such persons as may be willing to supply—
100 TONS OF CAKE COPPER FOR BOMBAY.
And that the conditions of the said contract may be had on application at the India Store Office, Cannon-row, Westminster, where the proposals are to be left any time before two o'clock P.M., of the said 31st inst., 1865, after which hour no tender will be received.
India Office, July 22, 1865. GERALD C. TALBOT, Director-General.

The Royal Cornwall Polytechnic Society.

THE ROYAL CORNWALL POLYTECHNIC SOCIETY.
FOR THE ENCOURAGEMENT OF SCIENCE, AND THE FINE AND INDUSTRIAL ARTS.—THE THIRTY-THIRD ANNUAL EXHIBITION OF THIS SOCIETY WILL TAKE PLACE at their Hall, Falmouth, on WEDNESDAY, AUG. 30, and following days. Silver and other medals, and money prizes, will be awarded in the following departments, viz.:—Mechanical, Mining, Naval Architecture, Professional and Fine Arts, Photography, Statistics, Plain and Fancy Work, School Productions, &c. Inventors, manufacturers, artists, and others, who may be desirous of exhibiting, are requested to communicate with the secretary. Any further information that may be desired as to time, rules, transfer of articles, lists of prizes and premiums, &c., will be forwarded on application. No charge for space.

Space or insertion in the catalogue or judges' books cannot be guaranteed after Tuesday, August 22.
Communications to be addressed to Mr. SIDNEY HODGES, secretary, Polytechnic Hall, Falmouth.—Falmouth, July 3, 1865.

MARIQUITA AND NEW GRANADA MINING COMPANY.—
Notice is hereby given, that the THIRTEENTH ANNUAL GENERAL MEETING of the shareholders of this company will be HELD at the London Tavern, Bishopsgate-street, on MONDAY, the 31st inst., at One o'clock precisely.
The transfer-books will be closed from 23d inst. to 31st inst., both inclusive.
6*l.*, Austin-friars, London, E.C., July 20, 1865. C. O. ROGERS, Sec.

VIGRA AND CLOGAU COPPER MINING COMPANY (LIMITED).—The Directors hereby give notice that they are OPEN TO RECEIVE APPLICATIONS, through the secretary, for the remaining FIVE HUNDRED NEW SHARES of £5 each, at £10 premium per share—payable, £12 10*s.* on allotment, and the remainder as it may be called up.
J. LOCKWOOD, Sec.
28, Back-lane, London, E.C.

THE SULPHUR AND COPPER COMPANY OF ANDALUSIA (LIMITED).—THE LIST OF APPLICATIONS FOR SHARES in this company will be CLOSED on FRIDAY, the 28th July inst., after which date NO FURTHER APPLICATIONS will be received.
By order, HERBERT HEATH, Secretary.
9, Sile-lane, Bucklersbury, E.C.

THE INVESTMENT, LOAN, AND FINANCE AGENCY
Undertakes the Sale and Purchase of Public Securities, and affords reliable information to Capitalists who seek sound Investments, free from risk or liability. The Loan and Finance Department includes Money Agency generally, Loans, deposits, &c., and advances are negotiated on Public Securities having a market value. The same uniform system of strict attention is paid to transactions of small as well as large amounts, the object being to embrace the business of every description of Investors.
CHARLES PETERS, Secretary.
Offices, 12, Clement's-lane, Lombard-street, London, E.C.

THE AMALGAMATED EISTEDDFOD, WEST MINERA, TWELVE APOSTLES, AND ROCK LEAD MINES.—TO BE SOLD, BY PRIVATE TREATY (by order of the Liquidators), the SETTS or LEASES OF THE VALUABLE MINES, together with all the PLANT.—Apply to Mr. J. M. MILNER, Kingston, Herefordshire.

THE AMALGAMATED EISTEDDFOD, WEST MINERA, TWELVE APOSTLES, AND ROCK LEAD MINING COMPANY (LIMITED).—NOTICE.—ALL PERSONS HAVING CLAIMS AGAINST THIS COMPANY ARE REQUESTED TO FORWARD IMMEDIATELY FULL PARTICULARS of such claims to Mr. J. M. Milner, Kingston, Herefordshire, that the same may be examined and discharged.
By order of the Liquidators,
THOMAS HOW, and JOHN MEER MILNER.

THE CWTY-BUGAIL SLATE COMPANY (LIMITED).—
Notice is hereby given, that an ORDINARY GENERAL MEETING of the shareholders of the above company will be HELD, *pro forma*, at the Penryn Arms Hotel, Bangor, on THURSDAY, the 24th of August, 1865, at One o'clock. It will be proposed that an adjournment of this meeting be made to the quarry, on the following day, at the same hour.

Notice is hereby further given, that an EXTRAORDINARY GENERAL MEETING of the shareholders of the above company will be HELD, *pro forma*, at the Penryn Arms Hotel, Bangor, on THURSDAY, the 24th of August, 1865, at Two o'clock, for the purpose of considering, and, if deemed advisable, passing a resolution to alter the 39th Clause of the Articles of Association, so as to enable general meetings to be held at other places besides Bangor. It will be proposed that an adjournment of this meeting be made to the quarry, to commence as soon as the business of the ordinary meeting shall have been transacted.
J. HAYWOOD, Managing Director.
Bangor, July 13, 1865.

CONNORREE MINING COMPANY (LIMITED).—Notice is hereby given, that an ORDINARY GENERAL MEETING of this company will be HELD at their offices, 35, Westland-row, Dublin, on SATURDAY, the 29th inst., at One o'clock, P.M., for the purpose of submitting the report of the directors and statement of accounts for the half-year ended 31st May, 1865, for the election of two directors and auditors, and their remuneration, and for the transaction of the ordinary business of the company.
N.B.—The Transfer Books of the company will be closed from the 18th to the 29th inst., both days inclusive.
By order,
35, Westland-row, Dublin, July 13, 1865. GEORGE DEDRICKSON, Sec.

CONSOLIDATED COPPER MINES OF COBRE.—Notice is hereby given, that a HALF-YEARLY GENERAL MEETING of the proprietors of this association will be HELD, in conformity with the Deed of Settlement, at the offices of the company, Gresham House, Old Broad-street, on MONDAY, the 1st day of July inst., at One o'clock precisely.

And notice is hereby also given, that at the said half-yearly general meeting the election of a director of the company will take place, to supply the vacancy in the direction occasioned by the resignation of George Whitmore, Esq. The shareholders will also have to elect at the said meeting an auditor, in the place of Henry Druce, Esq., resigned. It is necessary that persons intending to offer themselves as candidates for the direction or auditorship should leave notice of such intention at the offices of the company, at least 14 days before the day of election, and exclusive thereof.
J. D. DE VITTE, } Directors of the
WALTER SHAIPE, } Company.
Gresham House, Old Broad-street, July 10, 1865.

THE AUSTRALIAN MINING COMPANY.

Incorporated under Royal Charter.
Notice is hereby given, that the TWENTIETH ANNUAL GENERAL MEETING of the shareholders of this company will be HELD at the London Tavern, Bishopsgate-street, E.C., on MONDAY, the 31st inst., at One o'clock P.M. precisely.
To receive the report, accounts, and balance-sheet for the past year.
To elect directors in lieu of George Palmer, Esq., and Henry Collier, Esq., who retire by rotation.
To fix the remuneration of the auditors for the past year.
To elect auditors for the present year.
GEORGE PALMER, Chairman.
U. P. HARRIS, Sec.
No. 1, Coleman-street-buildings, Moorgate-street, London, E.C., July 10, 1865.

THE TAMAR LEAD AND SILVER SMELTING COMPANY (LIMITED).

Incorporated under the Companies Act, 1862.
Capital £60,000, in 5000 shares of £12 each. First issue, 3000 shares.
Deposit on application £1 per share, £2 on allotment, and £3 at the expiration of two months from the date of allotment.

A minimum annual dividend of 12 per cent. upon the paid-up capital guaranteed for three years.

A limited number of applications for fully paid-up shares will also be received. Further calls (if any) on the £3 paid shares not to exceed £2 per share, and no call beyond the £5 to be made earlier than six months from the date of allotment.

DIRECTORS.

J. BURNS, Esq., Hereford.
HARRY EVANS, Esq., F.R.S., F.I.A., Cheapside, and Belgrave House, Islington.
JOHN J. P. HITCHFIELD, Esq., R.N., Plymouth, Devon.
EDWARD RAMSEY, Esq., F.R.S., Plymouth, Devon.
J. HENRY ROWLEY, Esq., 35, Poultry, City, E.C.
SIDNEY SMITH, Esq., 5, Leonard-place, Kensington.
JOSEPH H. TILSTON, Esq., Chestnut-villas, Bayswater.
BANKERS—Metropolitan and Provincial, 75, Cornhill.
SOLICITORS—Messrs. Matthews and Gresham, 68, Lincoln's Inn-fields.
MANAGER AT THE WORKS—Mr. J. Bawden.
BROKER—A. Mellor, George Alley, 75, Old Broad-street.
SECRETARY—Mr. Joseph Chamberlain.
OFFICES.—ST. BOTOLPH CHAMBERS, 197, BISHOPSGATE STREET WITHOUT, CITY, LONDON.

This company is established for the purchase and working of extensive smelting works, occupying an area of upwards of four acres, with convenient wharf and other premises attached, situated at Beerferris, in the county of Devon, on the banks of the River Tamar, and about ten miles from Plymouth, which are held for a term of 21 years, under a grant from the Earl of Mount Edgcumbe, at the very low rent of £120 per annum. The works have been established upwards of 50 years, and the smelting business has been most successfully carried on to within a very few years, when the proprietors, who were formerly engaged in mining, were obliged to stop. The buildings, enclosed within walls, are numerous and efficient, and consist of dwelling-houses and offices, lead stuff, coal yard, and other convenient premises, in good condition, and contain 18 smelting, calcining, reducing, and other furnaces, refineries, two steam-engines, tools, &c. There is a good chimney at the back 140 ft. high, so as to carry off the noxious gases. These buildings must at the lowest computation have cost upwards of £50,000.

The situation is most favourable for the supply of ore from the various mines in Devon and Cornwall, and also of coals and other materials, as the premises about the River Tamar, which is navigable here, not only from Plymouth, but above the works, for vessels exceeding 400 tons burden. Vessels can discharge their cargoes at the wharf, and freight is very moderate. The local charges are easy, and labour is abundant.
It is proposed that the company shall purchase the lease of the works and premises, and all the rights of the owners for £3000, and in case of the second issue of shares taking place, then for the further sum of £2000, to be paid in cash or in fully paid shares at the option of the company. As an evidence of their confidence in the undertaking the vendors will take one-half of the purchase-money in paid-up shares, and will deposit in the hands of the directors sufficient security to guarantee a minimum dividend of 12 per cent. per annum for three years.

The promotion money will be paid or incurred in the formation of the company. The company will take the works from the 29th September last. The furnaces can be put into effective working at a moderate cost, and the latest improvements in the process of smelting will be adopted.

Calculations have been made of the probable profits, based on the results of other lead and silver smelting works, and from these and the reports of engineers who fully understand smelting, the directors feel justified in expecting dividends of 25 per cent. per annum.

It is not proposed in the first place to call up more than £18,000 of the capital, which, it is believed, will be fully sufficient to purchase the property, and provide the working capital. A large number of shares are already arranged to be taken, but should less than 2000 be applied for, the company will not be started on the present basis, and in that case all deposits will be returned without deduction.
Allottees of fully paid shares may pay either £1 per share on application, and the remainder on allotment, or £1 per share on application, £5 on allotment, and £5 at two months after the date of allotment.

Full particulars of the proposed operations may be obtained, and the Articles of Association inspected, at the offices of the company, St. Botolph-chambers, 197, Bishopsgate-street-without, City, London, and prospectuses and forms of application for shares may be obtained at the brokers, solicitors, and offices of the company.

BRAZIL.

THE TAQUARIL GOLD MINING COMPANY (LIMITED).

IN THE PROVINCE OF MINAS GERAES.
To be incorporated under the Companies Act, 1862, whereby the liability of shareholders is limited to the amount of their shares.
Capital £75,000, in 15,000 shares of £5 each.

No deposit will be required on application, and no shares will be allotted unless two-thirds are applied for.

10*s.* on allotment, £1 in three months, and £1 in six months.

No further call without six months' notice.

BANKERS—The London and County Bank, and branches.

BROKERS—Messrs. George Burnand and Co., Lombard-street.

Messrs. Taunton and Co., York-buildings, Liverpool.

SECRETARY—J. C. Goodman, Esq.

OFFICES.—9A, GREAT ST. HELEN'S, BISHOPSGATE STREET.

This company has been formed for the purpose of purchasing and working gold mines in Brazil; and with this object in view the directors have entered into a provisional contract for the purchase of the famous Taquaril Mine, upon the following advantageous terms, viz.:—£16,000 in cash, to be paid by instalments, and £10,000 in 4000 shares, of £12 10*s.* paid thereon.

The estate of Taquaril adjoins the Morro Velho estate, belonging to the celebrated St. John del Rey Mine, and is about four miles from that mine, which has returned to its proprietors no less than £380,500 in dividends, upon an outlay of £128,000.

Mr. Lanyon states in his report—"I have taken out about 100 lbs. weight of gold in so small a space as from 10 to 12 ft. of this lode." 100 lbs. weight of gold is worth upwards of £4000.

The Taquaril estate is freehold. The lodes run through it at a distance of about six miles.

No money will be paid to the vendors until the legal advisers of the company in Brazil have certified that the estate has been duly conveyed.

Some specimens of the gold from this mine have long since been deposited in the department of auriferous ores in the British Museum.

In order to avoid unnecessary trouble to applicants, no deposit will be required on application, and no shares will be allotted unless two-thirds are applied for.

No promotion money will be paid.

Applications for shares can be made, and prospectuses, reports, and all information obtained, at the company's offices, where plans may be seen; of the brokers, solicitors, &c.

THE ST. BRIDE'S UNITED SLATE AND SLAB COMPANY (LIMITED).
SECOND ISSUE OF 4000 SHARES.
Incorporated under the Companies Act, 1862, whereby the liability of the shareholder is limited to the amount of shares subscribed for.
Capital £80,000, in 40,000 shares of £2 each, with power to increase with the consent of the shareholders.
A deposit of 2s. 6d. per share to be paid on application, and 10s. per share on allotment, being the amount already called up.
No further calls to be made exceeding 5s. per share, nor at shorter intervals than three months.
It is contemplated that not more than 25s. per share will be required to be called for.

WILLIAM MARRIOTT, Esq., Grafton-place, Huddersfield.
JOHN DAVIES, Esq., Blain Marie House, Narbeth, South Wales (Director of the Torke Quarries).
ANSELM ODLING, Esq., Vassall-road, Brixton.
THOMAS KEY, Esq., Grove Hill House, Camberwell.
JOHN POULTNEY, Esq., Edgbaston, Birmingham.
MAJOR HEWETT, Esq., Velindre House, Llanfair, Haverfordwest.
HENRY KNIGHT, Esq., 56, King William-street, City.
BANKERS—The Bank of London, Threadneedle-street, London.
SOLICITORS—Messrs. Bennett and Stark, 4, Finsbury-lane, Holborn.
ADVISERS—Messrs. Cass and Edwards.
SECRETARY—Mr. S. Jones.
OFFICES—No. 18, NEW BRIDGE STREET, BLACKFRIARS.

The quarries belonging to this company are situated on the north coast of Pembrokeshire, midway between St. David's and Fishguard. The property comprises three distinct quarries, well opened, producing slabs and slate of the best marketable value, well known to the merchants of London, Liverpool, Bristol, Gloucester, Swansea, Southampton, Dublin, &c.

The vendors of this property manifest their entire confidence in the undertaking by consenting to take three-fourths of the purchase-money in paid-up shares, which are not to participate in any profits until the subscribers receive 10 per cent. per annum, and then only upon the same amount per share as the subscribers have paid up.

The directors entered into possession on the 9th of March last, since which every exertion has been made to bring the quarries into working order.

The following is a brief report of the present condition of the quarries:—
ABERYSTWYTH.—This quarry is opened to the extent of 150 yards in width, and laid out in five well-constructed galleries, capable of yielding a large quantity of slate without any further outlay.

Contracts have been made for the rebuilding of the sea-wall, at the vendor's expense. The new engine and boiler are now on the premises, and will be erected, and the quarries in full work in a short time.

PORTHOLM.—This quarry is now producing both slab and slate, the quantity only limited by the want of power during the construction of the new reservoirs; one is now complete, and the other will be finished by the end of August, when the directors hope to have made provision for a constant supply of water.

Contracts have been made for planing and sawing frames, which the directors calculate will be in full work by September.

TRAFALGAR.—The works necessary to put this valuable quarry in operation have developed the value of the property to a much greater extent than was anticipated. The seam, which is of the best metal, proves to be much wider than shown by the old working.

This quarry will be in profitable work by the end of September.

PORTRUGHAN HARBOUR.—This freehold harbour, which adds so much to the value of the quarry, by affording a cheap transit, is now being deepened so as to allow of larger vessels entering it.

In drawing the attention of capitalists to this splendid property as a profitable field for investment, the directors would especially point out the large amount expended upon these quarries by the former proprietors in opening them so extensively and conveniently for economical working; also, the unusually great facilities afforded by the harbour, and particularly in the satisfactory arrangement made in the purchase, whereby the subscribers have a preferential dividend of 10 per cent. per annum. Upwards of 14,000 shares have been subscribed for; but the directors prefer making a further issue of 4000, which will enable them to work the entire set without calling up more than 25s. per share.

The directors have every confidence in being able to pay a good dividend by the first year's working.

FORM OF APPLICATION FOR SHARES.

To the Directors of the St. Bride's United Slate and Slab Company (Limited).
GENTLEMEN,—Having paid to the Bank of London, Threadneedle-street, the sum of £2, I request you to allot me shares in the St. Bride's United Slate and Slab Company (Limited), and I hereby agree to become a member of the company, and to accept such shares, or any less number that may be allotted to me; and I request you to place my name on the Register of Members in respect of the shares allotted to me.

Name in full.....
Address.....
Occupation.....
Usual signature.....
Date.....
Prospectuses and forms of application for shares may be obtained of the secretary, at the office of the company.

THE MOLD CONSOLIDATED LEAD MINING COMPANY (LIMITED).
Formerly known as the Cat Hole and Gwern-y-Mynydd Mines, near Mold.
Incorporated under the Companies Act, 1862, whereby the liability of each shareholder is limited to the amount of shares subscribed for.
Capital £60,000, in 6000 shares of £10 each, on which it is intended to call up not more than £47 per share.
Deposit, £1 per share on application, and £1 on allotment.
No call to exceed £1 per share, at intervals of not less than two months.

DIRECTORS.
B. D. G. COOKE, Esq., Colomendy, near Mold, High Sheriff for the county of Flint.
THOMAS HANMER WYNNE, Esq., Nersula Hall, near Mold.
EDWARD BENNETT, Esq., Bedstone Hall, near Aston-on-Cliun, Salop.
JOHN DARLINGTON, Esq., Miners, near Wrexham.
JOHN TREASURE, Esq., Shrewsbury and Newport, Salop.
GEORGE BEARD, Esq., Ironmaster, Regent Works, Bilston.
THOMAS ROSE, Esq., Ironmaster and coalowner, Wolverhampton.
EDWARD HULL, Esq., F.G.S., of the Geological Survey of Great Britain, Manchester.
ROBERT MARTIN, Esq., M.D., Warrington.

BANKERS—Messrs. Halliell, Ormskirk, and Co., 14, Great George-street, Westminster.
Messrs. Dixon and Co., Eastgate-street, Chester.
North and South Wales Bank, Liverpool and Mold.
National Provincial Bank of England, Wrexham and Mold.
Bilston District Banking Company, Wolverhampton.

SOLICITORS—Messrs. Roberts, Kelly, and Keene, Mold.
RESIDENT ENGINEER—George Darlington, Esq., Mining Engineer, Wrexham.
CONSULTING ENGINEER—Henry Beckett, Esq., F.G.S., Wolverhampton.

HONORARY SECRETARY—Edward Stokes Roberts, Esq., city treasurer, Chester.
ACTING SECRETARY—John Charles Griffin, Esq.
AUDITORS—Messrs. Broome, Child, Murray, and Co., 104, King-street, Manchester.
BROKERS—Messrs. Barrett and Co., 9, Spring-gardens, Charing-cross, London.
George Batters, Esq., 66 and 67, Old Broad-street, London, E.C.
Messrs. Taunton and Co., stockbrokers, Liverpool.

TEMPORARY OFFICE.
CITY TREASURER'S OFFICE, LOWER BRIDGE STREET, CHESTER.

This company has been formed to re-open and work the celebrated Cat Hole and Gwern-y-Mynydd Mines of lead and zinc ores, situated in the parish of Mold, in the county of Flint.

The set is very extensive, including about 300 acres, and is held upon a highly-favourable lease, granted to the vendors by the lords of Mold, for a term of 21 years at a royalty of 1-15th for the first half of the term, and 1-12th for the remaining half.

The company has secured from the vendors all their rights and interests whatsoever in the lease, for a sum representing £8000, in the manner following, viz.—£2500 in cash, and the balance in shares of £7 paid.

These mines are most conveniently situated both as regards carriage and fuel; lying close by the high road to Mold, and within a mile and a-half of that town, they are within easy reach of the Chester and Mold Railway. Coal for engine and other purposes can be delivered on the mine at 8s. 6d. per ton. Labour is abundant.

The mines have been drained by two adit levels, to a depth of 100 yards from the surface; one of these adits, entering the works from the east, has been driven about 1200 yards in length; the other, entering the mine from the west, is about 1200 yards in length, and lies for the most part on the lode itself. There are several shafts on the estates, sunk to depths varying from 80 to 170 yards. It would be difficult to over-estimate the value of these important works, which have involved an enormous outlay of capital and years of time in their development, all of which will be available for these works.

These mines have the reputation of being among the richest in the kingdom, and quite out of the category of speculative ventures.

The reports of the mining engineers, extracts from which are attached to the prospectus, will more fully explain the value of this property. The detailed reports and plans, together with the Articles of Association, may be inspected at the company's office.

It is well understood that, however intrinsically rich in minerals a mining property may be, its successful development will, to a great extent, depend upon the conscientiousness and skill of the engineer who has charge of the mine; and feeling the full force of this, it is with no small satisfaction that the promoters have been able to secure the able services of Geo. Darlington, Esq., mining engineer, of Wrexham, who possesses a most intimate knowledge of these mines, which fact gives a more than ordinary value to his opinions and counsel.

The opinion of Mr. Darlington, sen., who has been chiefly instrumental in developing the wonderful mineral wealth of Miners, will be gathered from his report, given at length in the prospectus.

Mr. Darlington is fully convinced that the Mold Consolidated Mines, judiciously worked, promise to be as profitable as the Miners Mine, the £25 shares of which are at present quoted £280 to £300.

ACCIDENTS TO LIFE OR LIMB, in the FIELD,
the STREETS, or at HOME, provided for by a Policy of the
RAILWAY PASSENGERS' ASSURANCE COMPANY, 64, CORNHILL, LONDON, E.C.

Compensation has been paid for 10,000 claims.
£1000 in case of Death, or £50 per week while laid up by Injury, secured by
An Annual Payment of from £3 to £5 5s.

For particulars apply to the Clerks at the Railway Stations, to the Local Agents, or at the Offices,
64, CORNHILL, and 10, REGENT STREET.
W. J. VIAN, Sec.

GOVERNMENT SECURITIES, JOINT-STOCK BANKS,
RAILWAY DEBENTURES AND BONDS, COLONIAL SECURITIES,
FOREIGN BONDS, AND BRITISH MINES.—Messrs. TREDNICK AND CO.,
of 78, LOMBARD STREET, LONDON, E.C., may be consulted confidentially as to the eligibility of all bond and share investments. A selected list forwarded on application.

MESSRS. TREDNICK AND CO., STOCK AND SHAREBROKERS, AND DEALERS IN BRITISH MINING SHARES,
78, LOMBARD STREET, LONDON.

"THE CITY HERALD," A Journal of Commerce, Banking, and Mining. Price 1d.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the WEST WHEAL TREVELAN MINING COMPANY.—Notice is hereby given, that ALL CREDITORS of the ABOVE-NAMED COMPANY are REQUIRED, on or before the 1st day of August next, to SEND IN THEIR NAMES AND ADDRESSES, and the AMOUNTS and PARTICULARS of THEIR SEVERAL CLAIMS on the said company, to William Mitchell, Esq., the Registrar of the said Court at Truro. Dated Registrar's Office, Truro, July 17, 1885.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Devon.

IN the MATTER of the COMPANIES ACT, 1862, and of the ROBOROUGH DOWN TIN AND COPPER MINING COMPANY (LIMITED).—TO BE SOLD, under the direction of the Registrar of this Court, BY PUBLIC AUCTION, at ROBOROUGH DOWN MINE, in the parish of Buckland Monachorum, on Wednesday, the 23rd day of August next, at Eleven o'clock in the forenoon, together with all the INTEREST of the ABOVE-MENTIONED COMPANY of and in the said ROBOROUGH DOWN MINE, and the UNDERMENTIONED MINING MACHINERY, MATERIALS, and OTHER EFFECTS, viz.:—COMBINED ENGINE, 21 in. cylinder; BOILER, 7 tons; fly-wheel, 10 tons, complete; capstan, stays, &c.; 11 in. capstan rope, nearly new; shears and stays, shaft and other bobs, flat and other rods, drawing machine, stamps axle, frames, lifters, complete; windbores, pumps, 18 in. dooppiece and door, tram wagon, rail iron, tram saddles, and a quantity of other materials in general use in mines.

JOHN GILBERT CHILCOTT, Truro
(Agent for Edward Chilcott, Tavistock, Solicitor for the Petitioners.)

Dated Registrar's Office, Truro, July 18, 1885.

In Chancery.

THE VICE-CHANCELLOR WOOD AT CHAMBERS.

IN the MATTER of the JOINT-STOCK COMPANIES WINDING-UP ACTS, 1848 and 1849, and of the JOINT-STOCK COMPANIES WINDING-UP AMENDMENT ACT, 1867, and of the SOUTH LADY BERTHA COPPER MINING COMPANY.—By direction of the Vice-Chancellor Sir William Page Wood, the Judge of the High Court of Chancery, to whose Court the winding-up of this company is attached, notice is hereby given that the said Judge will, on Tuesday, the 25th day of July, 1885, at Twelve o'clock at noon, at his chambers, No. 11, New-square, Lincoln's Inn, in the county of Middlesex, PROCEED TO MAKE A CALL on the several persons who are settled on the list of contributories of the said company, and that the said Judge proposes that such call shall be for TWO POUNDS PER SHARE.

All persons interested are entitled to attend at such day, hour, and place, to offer objections to such call.

HENRY LEMAN, Chief Clerk.
R. P. HARDING, 5, Serle-street, Lincoln's Inn, and 3, Bank
J. W. RARETT, 8, Bell-yard, Doctor's Commons, Solicitor.

Dated this 6th day of July, 1885.

PONTHRYFENDIGAIL, CARDIGANSHIRE.

EXTENSIVE AND IMPORTANT SALE OF VERY VALUABLE MINING MACHINERY AND MATERIALS.

MR. G. T. SMITH has been favoured with instructions to OFFER FOR SALE, BY AUCTION, on Friday, the 28th day of July, 1885, at Twelve o'clock at noon, on the mine, the whole of the VALUABLE MINING MACHINERY, MINING PLANT, and MATERIALS of the BRYNSHOPE MINES, comprising FOUR powerful WATER-WHEELS of different dimensions, from 16 to 40 ft. in diameter; air machine for shaft, a large quantity of iron rods, nearly 400 iron pulleys, stands, &c.; 2 angle bobs, and 1 fend-off bob; 3 bobs with poppet heads; large capstan, with shears, stays, and pulleys, a most excellent article; 2 horse whins; about 60 fms. iron pumps, in capital condition; crushing machine, rollers, tumbling shaft, and heavy driving gear complete; drawing machines for landing and for drawing trams, nearly 10 tons of rails, 5 tram wagons, kibbles, jigs, hutchies, sheds, launders, round bobbles and wheels, crab winches, quantity of timber, dolly, iron, chains, tools of various descriptions, smiths' bellows, anvil and vice, and a variety of other most useful articles.

The mines are within a few minutes easy walking of Ponthryfendigail, are distant from Tregaron about five miles, about 14 from the seaport town of Aberystwith, where there is a first-class station of the Cambrian Railway, affording direct communication with all parts of the kingdom, and are in the very heart of the richest and most productive mineral district of Cardiganshire.

Catalogues are in preparation, and the auction will be subject to conditions to be read at the time and place of sale.

The auctioneer is desirous of calling the attention of his numerous friends connected with the mining interest in the neighbourhood to this important sale, as the machinery is of a superior description, and in excellent order, much of it being nearly new, a most eligible opportunity, therefore, presenting itself to purchasers.

For further particulars, apply to H. J. WESTRUP, Esq., 2, Austinfriars, Old Broad-street, London, E.C., or to the Auctioneer, Aberystwith.

STEAM ENGINES, MINE MATERIALS, OFFICE FURNITURE, WOOD SHEDS, &c., FOR SALE, BY AUCTION.

MESSRS. OLVER AND SONS are favoured with instructions to SELL, BY PUBLIC AUCTION, on Monday, the 31st July inst., at noon, on the mine, the whole of the MATERIALS, &c., of the RETANNA HILL, situated in the parish of Wendron, about four miles from Helston, comprising—
ONE 22 inch cylinder ENGINE, with two fly-wheels and driving gear complete, and BOILER about 8 tons.

2 7 in. dooppieces, 1 6 in. ditto, 2 7 in. windbores, 1 6 in. ditto, 2 7 in. working barrels, 1 6 in. ditto, 8 9 in. pumps, 7 9 in. ditto, 2 shaft tackles and 1 horse whin, 2 L bobs, 9 fms. 1 1/2 in. rods, 38 fms. 1 in. ditto, 35 fms. 1 1/2 in. ditto, 13 pulleys and stands, 40 fms. launders and stands, whin chain, winch, new iron, smiths' tools, miners' tools, smiths' bellows, anvil, 3 in. kieves, 40 fms. ladders, carpenters' bench, grinding stone, sundry loads of wood, &c. Also the following:—Newly-erected wood sheds, smiths' shop, material house, carpenters' shop, 3 stable stalls.

The whole of the foregoing machinery, &c., is in good working order, and will be sold in lots to suit the convenience of purchasers.

May be viewed any time prior to the auction, by applying to the agents on the mine, and all further particulars known on application to the auctioneers.

Dated Falmouth, July 17, 1885.

GLAMORGANSHIRE.

MR. H. W. HARRIS WILL SELL, BY AUCTION, at the Castle Inn, Neath, on Thursday, the 10th day of August, 1885, at Five o'clock in the afternoon (subject to such conditions of sale as shall be then produced), all that COLLIERY, called the LOWER RESOLVEN COLLIERY, in the VALE OF NEATH.

The taking comprises the Resolven Vein and all seams of coal below it, under 600 acres or thereabouts, held under Wm. Jones, Esq., of Tyn-yr-heol.

The royalty is 5d. per ton. Deans rent, £500 a year. Term 99 years, from September, 1856; power to the lessees to determine the lease on twelve months' notice.

Engine coal and workmen's coal free of royalty.

There are also surface lands held with the colliery to the extent of 13a. 2r. 35r., for the same term, at a yearly rent of £50 10s.

The coal is won by a drift from the surface, and driven in coal for 800 yards or thereabouts in the Resolven Seam.

The colliery is immediately upon the Vale of Neath Railway.

This seam of coal is largely worked in the adjoining colliery of the Messrs. Ormskirk; it stands high in the Admiralty List for evaporative power.

The seam proves 3 feet thick in the face of the drift, where it is of first-rate quality. The lower seams are of great value, and are worked in neighbouring collieries.

THE ENGINES, PUMPS, and PLANT to be taken at a valuation.

For further particulars apply to the Auctioneer, Merthyr-Tydfil; and to see copies of the leases apply to Messrs. C. H. and F. JAMES, solicitors, Merthyr-Tydfil; and to view the colliery and plans apply to Mr. C. HENRY JAMES, mineral surveyor, 35, Thomas-street, Merthyr-Tydfil; or to T. MACDONALD SMITH, Esq., 1, Chapel-place, Wrexham, Westminister.

NORWAY.

VALUABLE and IMPORTANT SILVER MINES, in the ANNA SOPHIA MINING DISTRICT of NORWAY, together with all the MACHINERY, STAMPING MILLS, PLANT, &c. Well worthy the attention of capitalists and others.

MR. MARSH WILL SELL, BY AUCTION (by order of the Liquidators of the East Kongberg Native Silver Mining Company of Norway, Limited), previously disposed of by private contract, at the Guildhall Coffee-house, on Thursday, September 7, 1885, at Twelve o'clock, in One Lot, the VALUABLE SILVER MINES in the ANNA SOPHIA DISTRICT of NORWAY, on the eastern side of the River Lungen, a few of the principal of which are the ANNA SOPHIA, RAMSRUD, RAMSVIG, and NEUES GLUCK, which are in most complete working order, and adjoin the Government Mines of Kongberg. There is an abundance of water-power, cheap timber, and mining labour may be obtained at a moderate rate.

May be obtained of Messrs. SHEPPARD and RUSSELL, solicitors, 38, Moorgate-street; of GEORGE GRANT, Esq., 123, Fenchurch-street, E.C.; of Messrs. CATHART and HANFORD, accountants, No. 7, Skinner's place, Sise-lane; and at Mr. MARSH'S, 2, Charlotte-row, Mansion House.

MERIONETHSHIRE MINING SETTS FOR SALE—IRON SLATE, and MANGANESE.—Or shares in either of the above, situated near railways. The iron and manganese of rich quality, and abundant at surface. The slate sets near prosperous quarries.—Address letters Mr. G. E. PETERS, Doigally.

MINERALS IN AYRSHIRE.

TO BE LET, for 30 years, and entered to immediately, the BLACKBAND and CLAYBAND IRONSTONE, COAL, LIMESTONE, FREESTONE, FIRE CLAY, and COMMON CLAY, within the lands of UPPER and NETHER BECHO and HEADMARK and KNOCKGULDON, extending the said lands to 3680 acres imperial or thereby, parts of the CRAIGENGILLAN ESTATE, in the parishes of NEW CUMNOCK and OCHILTREE, and shire of AYR.

This field comprises the well-known Aldnaw Smithy Coal, and it is situated within four miles of the Railway Station at Dalmeilington.

Offers in writing will be received till 1st August, 1885, by Mr. A. SMITH, W.S., 18, York-place, Edinburgh; and for further information application may be made to him, or to Mr. KENNEDY SMITH, Berbeth Mains, Dalmeilington.

Edinburgh, June 14, 1885.

MINERALS IN AYRSHIRE.

TO BE LET, for 30 years, and entered to immediately, the VERY SUPERIOR HEMATITE IRON ORE, BLACKBAND, and CLAYBAND IRONSTONE, COAL, LIMESTONE, FREESTONE, FIRE CLAY, SAND, and COMMON CLAY, within the lands of GARPEL UPPER and NETHER WHITEHAUGH, CHAPEL-HOUSE, and NORTH and SOUTH LIMERHAUGH, extending the said lands to 4860 acres imperial or thereby, parts of the estate of CRAIGENGILLAN, situated in the parishes of MURKIRK and SOLE, and shire of AYR.

Offers in writing will be received till 1st August, 1885, by Mr. A. SMITH, W.S., 18, York-place, Edinburgh; and for further information application may be made to him, or to Mr. KENNEDY SMITH, Berbeth Mains, Dalmeilington.

Mr. Gavin Gemmell, tenant in Garpeil, will point out the mineral field, and show specimens of hematite ore, which may likewise be seen at 18, York-place, Edinburgh.

Edinburgh, June 14, 1885.

GLAMORGANSHIRE.

VALUABLE COLLIERY AND BLACKBAND IRONSTONE FOR SALE.

TO BE SOLD, BY PRIVATE CONTRACT, the CLIVACHVARGOED COLLIERY, in the parish of Gelly-Gare, with the GINE, smiths' tools, &c., now in good order.

The colliery comprises about 60 acres of unworried coal of the two upper Myrhyddes of the Marquis of Bute, and Lord Dynevor and Mrs. Richards, at a royalty of 1d. for each customary ton of 2820 lbs.

Also the unworried portions of the beds of blackband and ironstone, comprising about 60 acres, held under the same lessors, at a royalty of 1d. per customary ton, except a small portion at 14d.

The blackband has been found in three workable beds, together about 2 1/2 ft. in thickness, and containing about 35 per cent. of iron in the raw state, or 50 per cent. when calcined; the wayleaves payable are £50 per annum to the late Mr. C. H. Leigh's Trustees, and 1d. per ton to the Bute Trustees.

Also the surface lands of Clivachvargoad Vach, containing about 36 acres of waste lease for 41 years, from 1855, at the yearly rent of £44, and a wayleaves of 1d. per ton upon coal other than that worked from the lands of the late C. H. Leigh, Esq.

Also a piece of freehold land, containing about four acres, adjoining the Ramsey River, partly occupied by slings and tips, connecting the above-named colliery with the Old Ramsey Railway.

The colliery and blackband openings are in good working order, and have tips and leading to the ports of Newport and Cardiff (distant respectively about 13 and 17 miles), and communicating with all the other railways in the district.

The colliery commands a considerable tract of coal to the rise of the present workings not yet opened upon.

The coal is of the best description of Red Ash House Coal, and the blackband has been extensively supplied to the Rhymney Iron Company and other works in the district.

For further particulars, and to treat for the sale thereof, apply to Mr. THOMAS LLOYD, Victoria-place, Newport, Monmouthshire, July 19, 1885.

TO MUNDIC PURCHASERS.

WHEAL JANE MINE, KEA, NEAR TRURO.—There are on SULPHUR, PARTIAL, and for sale, THREE HUNDRED TONS COFFERT and PUBLIC TENDER. Samples of the same may be had on applying to the agents on Friday, the 25th inst.—Dated July 12, 1885.

THE PERRAN COPPER MINES, PERRANZABULOE.—The PROPRIETORS of these mines are DESIROUS of seeing them EFFECTUALLY WORKED, but the capital required is beyond their means. They now, therefore, INVITE THE ATTENTION of mining CAPITALISTS to this fine MINING PROPERTY. The returns during the last working amounted to the large sum of £102,146, and the present proprietors to nearly £4000 from above the adit level, and the entire, including the plant, may be had on favourable terms.

Reports from reliable mining authorities, and particulars, to be had on application to Mr. HITCHINS, St. Agnes; or Capt. T. FILL, at the mines.

St. Agnes, Scouriey, July 19, 1885.

TO CAPITALISTS SEEKING SAFE AND PROFITABLE INVESTMENTS IN MINING OPERATIONS.

IRON MINES—SULPHUR AND COPPER MINES—FOR SALE. With the SMELTING-WORKS and other buildings attached, situated in a rich mineral district in the kingdom of NORWAY, possessing easy access to the port of shipment. The ores are exceedingly rich, and raised at comparatively small cost. Some of the mines have been worked, and have yielded large profits to the present proprietors.—For further information, apply to Messrs. ALBERT PELL and Co., 24, Finch-lane, Cornhill, London.

COPPER AND PYRITES MINES IN NORWAY.—THREE OF FOUR COPPER AND PYRITES MINES, situated in the vicinity of the rich mining district of KONGSBERG, FOR SALE. A good waterfall and plenty of water for the mines. All enquiries will meet with due attention, by applying to Mr. OPDAL, Elvegaden, Christiania.

ONE-THIRD of a SILVER-LEAD MINE in CORNWALL. TO BE DISPOSED OF, price £500, to be appropriated solely towards the working of the mine, for the erection of machinery, &c., by which returns are almost certain to be at once made by the sale of silver, before cutting the lode rich for lead, the ore right up to grass averaging 10 ozs. of silver to the ton, one assay producing 44 ozs. (taken from the footwall of the lode, only 6 feet from surface), extracted by Mr. W. Richards, assayer of gold and silver, 20, Red Lion-street, Clerkenwell. This is a legitimate, bona fide concern, the want of capital to carry it out by himself being the advertiser's only reason for this insertion.—Address, "P. J. B., No. 16, Richmond-road, Dalston, N.E."

SLATE QUARRY—TO CAPITALISTS.—The ADVERTISER is READY TO NEGOTIATE for the SALE of a FIRST-CLASS SLATE QUARRY in NORTH WALES, situated on the sea shore, thus saving the great expense of cartage. There is sufficient elevation in the land, so that it can be opened in the cheapest form—viz., by open galleries. The sea being close by will form ample reception for the rubbish. It is undoubtedly the cheapest quarry to open in the Principality. Sufficient trial has been made to prove that there is an abundance of stone, and those of the finest quality. The present proprietors will leave one-fourth of the purchase money towards the working of the quarry.—For full particulars, report, &c., apply to Mr. W. R. WILLIAMS, Bontuchaf, Bethesda, near Bangor.

SLATE AND SLAB SETT FOR SALE.—The work done proves that this quarry, with careful management and a little outlay, will become a very profitable one. The vein is very wide, on rising ground, traversed by two streams of water, 10 miles from a seaport, and 2 1/2 miles from a tidal railway wharf. A SETT with LEAD and SLATE, proven, FOR SALE.—Address, Mr. G. E. PETERS, Doigally.

TO BE SOLD, BY PRIVATE CONTRACT, the whole of the JORDAN COLLIERY PLANT, consisting of ONE POWERFUL PUMPING ENGINE, with pumps, spars, &c., complete. ONE COAL-WINDING ENGINE, FOUR BOILERS, WINDLASS, COAL-WEIGHING MACHINE, &c.—Apply to P. Cooper, manager, Holmes Colliery, Rotherham.

TO BE LET, and entered upon immediately, some most VALUABLE and INEXHAUSTIBLE LIME ROCKS and FLUXING STONE, not to be surpassed in North

NICHOLLS, WILLIAMS, AND CO., ENGINEERS,
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MANUFACTURERS OF STEAM ENGINES OF EVERY DESCRIPTION, made on the BEST AND NEWEST PRINCIPLES. We beg more especially to call the attention of the public to the manufacture of our BOILERS, which have been tested by most of the leading engineers. PUMP WORK CASTINGS OF EVERY DESCRIPTION, both of brass and iron. HAMMERED IRON AND HEAVY SHAFTS OF ANY SIZE. CHAINS made of the best iron, and warranted. RAILWAY WORK OF EVERY DESCRIPTION.
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The improvement consists in its having only a single spring, which is strong enough to take the full load; to overhaul the broken rope, however distant the fracture may be; and yet so constructed that it cannot be broken into play till the rope is broken. It is an ordinary carriage spring, and can be replaced, when needed, at any coach-work. Makers of cages, or inventors, who may wish to combine the safety clutch with their own improvements are respectfully informed that liberty to do so will be granted to them on easy terms. Apply to the patentee, ROBERT AYTOUN, 3, Fettes-row, Edinburgh.

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AS NOW ADAPTED BY LENK'S PROCESS
GUN COTTON
IS THE CHEAPEST AND SAFEST EXPLOSIVE,
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MANILLA ROPE OF SUPERIOR QUALITY, FIFTY PER CENT. STRONGER, AND THIRTY PER CENT. CHEAPER than Russian hemp rope.
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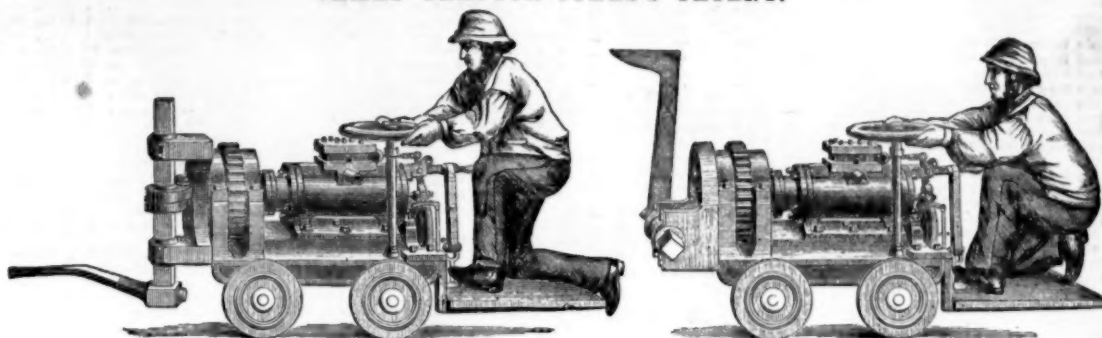
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CHARLES RYLAND AND SONS, Iron and Metal Brokers.

THE STOCKTON AND HARTLEPOOL MERCURY AND MIDDLESBOROUGH NEWS (published at Hartlepool) is eminently the organ of the Coal, Iron, and Ship-building Trades in the extensive Mining and Maritime Districts of South Durham and Cleveland, with which it has been closely identified since its origin. The "Mercury" was for years the only newspaper published in South Durham and Cleveland, and is yet the only one published more than once a week. Advertisements to be forwarded to the publisher, Mr. JOHN H. BELL, Southgate, Hartlepool.

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COAL CUTTING MACHINERY.

JAMES GRAFTON JONES'S PATENT.



Pick in position for holing.

Pick in position for vertical cut downwards.

Pick in position for vertical cut upwards.

Messrs. JONES and LEVICK, proprietors of this patent, are prepared to supply these Machines, which are on an improved principle, and are constructed to work the coal at any angle from the horizontal to the vertical, thus rendering them capable of "holing" at any angle, and of driving "headings." They are simple and substantial in construction, and are not likely to get out of order. They are already successfully employed in the Barnsley coal district, and are being introduced into the South Wales and other coal mining districts. They are also suitable for mining the argillaceous ironstones of the coal measures, as well as working other mines and quarries.

N.B.—Air Compressing Machinery will be supplied, or plans and specifications furnished.

Applications to be made to Messrs. FREDERICK LEVICK and Co., 4, Charlotte-row, Mansion House, London; or Messrs. LEVICK and SIMPSON, Blaina Ironworks, near Newport, Monmouthshire.

International Exhibition, 1862—Prize Medal.



JAMES RUSSELL AND SONS
(the original patentees and first makers of wrought-iron tubes), of the CROWN PATENT TUBE WORKS, WEDNESBURY, STAFFORDSHIRE, have been AWARDED A PRIZE MEDAL for the "good work" displayed in their wrought-iron tubes and fittings.
Warehouse, 81, Upper Ground-street, London, E.C.

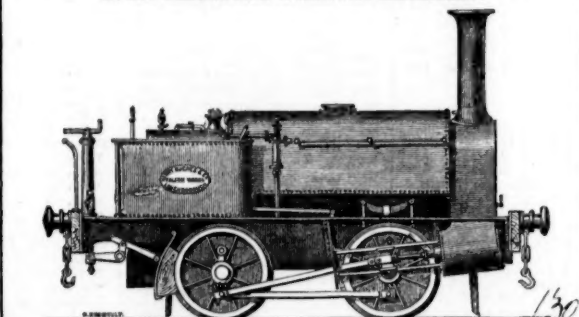


BICKFORD'S PATENT SAFETY-FUSE OBTAINED THE PRIZE MEDALS at the ROYAL EXHIBITION of 1851, at the INTERNATIONAL EXHIBITION of 1862, in London, and at the IMPERIAL EXPOSITION held in Paris, in 1855.



BICKFORD, SMITH, AND CO.,
BUCKINGHAM, CORNWALL, MANUFACTURERS, of PATENT SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
EVERY COIL OF FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH THE COLUMN OF GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS AS THEIR TRADE MARK.

HENRY HUGHES AND CO.,
FALCON RAILWAY PLANT WORKS,
LOUGHBOROUGH,
ENGINEERS, IRONFOUNDERS, BOILER MAKERS, AND MANUFACTURERS OF EVERY DESCRIPTION OF RAILWAY MACHINERY.



LOCOMOTIVE ENGINES, for MINERAL AND CONTRACTORS' RAILWAYS, of the best materials and workmanship, always in progress. These engines are designed to supply the chief requisites in tank locomotives—viz., reduction of the overhanging weight at the fire-box end, proper distribution of the weight upon the wheels, and keeping the centre of gravity low. These are accomplished by making the fire-box and its shell on an improved principle, which enables the driving axle to be placed further back without interfering with the eccentrics and valve gear, which are of the usual simple description.

First Class Silver Medal, Royal Polytechnic Society, Falmouth, 1864.

CREASE'S PNEUMATIC TUNNELLING ENGINE, for SUPERSEDING THE SLOW AND EXPENSIVE USE OF MANUAL LABOUR IN SINKING SHAFTS, DRIVING LEVELS, TUNNELLING, &c., is guaranteed to drive through any rock of average hardness at a minimum rate of 1 fm. per diem, and to sink shafts at the rate of 2 fms. in three days.
Mr. CREASE will undertake contracts for sinking shafts, driving levels, &c., at an enormous reduction of time and great saving in cost.
Applications to be addressed (for the present) to the patentee, Mr. E. S. CREASE, Tavistock, Devon.

BASTIER'S PATENT CHAIN PUMP, APPARATUS FOR RAISING WATER ECONOMICALLY, ESPECIALLY APPLICABLE TO ALL KINDS OF MINES, DRAINAGE, WELLS, MARINE, FIRE, &c.



J. U. BASTIER begs to call the attention of proprietors of mines, engineers, architects, farmers, and the public in general, to his new pump, the cheapest and most efficient ever introduced to public notice. The principle of this new pump is simple and effective, and its action is so arranged that accidental breakage is impossible. It occupies less space than any other kind of pump in use, does not interfere with the working of the shafts, and unites lightness with a degree of durability almost imperishable. By means of this hydraulic machine water can be raised economically from wells of any depth; it can be worked either by steam-engine or any other motive power, by quick or slow motion. The following statement presents some of the results obtained by this hydraulic machine as fully demonstrated by use:—
1.—It utilizes from 90 to 92 per cent. of the motive power.
2.—Its price and expense of installation is 75 per cent. less than the usual pump employed for mining purposes.
3.—It occupies a very small space.
4.—It raises water from any depth with the same facility and economy.
5.—It raises with the water, and without the slightest injury to the apparatus, sand, mud, wood, stone, and every object of a smaller diameter than its tube.
6.—It is easily removed, and requires no cleaning or attention.
BASTIER'S PATENT CHAIN-PUMP may be seen daily in operation at Messrs. SAMUEL BERGER and Co.'s Patent Rice Starch Works, Bromley-by-Bow, London, E. Cards of admission to be had on application to the inventor and patentee, Mr. J. U. BASTIER, C.E., 142, Gower-street, North, London.

U. BASTIER, sole manufacturer, will CONTRACT to ERECT HIS PATENT PUMP AT HIS OWN EXPENSE, and will GUARANTEE IT FOR ONE YEAR, or will GRANT LICENSES to manufacturers, mining proprietors, and others, for the USE of his INVENTION.
OFFICES, 142, GOWER STREET NORTH, LONDON.
London, March 21, 1865. Hours from Ten till Four. J. U. BASTIER C.E.

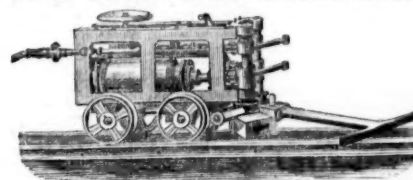
COAL CUTTING MACHINERY.—The WEST ARDSLEY COMPANY having, by recently patented improvements, perfected their coal cutting machinery, worked by compressed air, are NOW READY to MAKE CONTRACTS for the CONSTRUCTION and USE of their MACHINES.

The results of twelve months' experience in the working of these machines, by the West Ardsley Company, have proved most satisfactory, their use being found to CHEAPEN THE COST and IMPROVE THE average SIZE of the COAL, to LIGHTEN THE LABOUR, and also to MODIFY THE SANITARY CONDITION of the MINE.

All communications to be made to Messrs. FIRTH, DONNERMORF, and BOWER, No. 8, Britannia-street, Leeds.

NOTICE.—The WEST ARDSLEY COMPANY, having reason to believe that their patents are being infringed upon, hereby give notice that they will TAKE LEGAL PROCEEDINGS AGAINST ALL PARTIES who may MAKE FOR SALE, or USE ANY MACHINERY in the construction of which any such INFRINGEMENT is MADE.

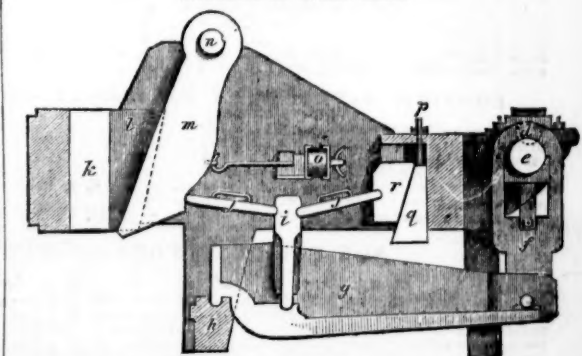
COAL CUTTING BY MACHINERY.



MESSRS. RIDLEY AND CO. have, by recently PATENTED IMPROVEMENTS, COMPLETED their TRUNK COAL CUTTING MACHINE, WORKED BY COMPRESSED AIR, and are NOW PREPARED to NEGOTIATE for the USE, and to SUPPLY MACHINES, which will be found to COMBINE SIMPLICITY of CONSTRUCTION with PORTABILITY and ECONOMY in WORKING. By the use of these machines a CONSIDERABLE SAVING of COAL is EFFECTED, and the COST of LABOUR MUCH REDUCED. Each machine will be guaranteed as to its capabilities, &c.
All applications to be made to Messrs. RIDLEY and Co., No. 11, South-street, Finsbury London, E.C.; or Mr. PERCY BANKART, agent, 9, Clement's-lane, E.C.
* COLLIERY PROPRIETORS are CAUTIONED against PURCHASING or USING MACHINES, the construction of which will constitute an INFRINGEMENT of the ABOVE PATENT.

CHARLES DAVEY AND CO.,
SAFETY FUSE MANUFACTURERS,
ST. HELEN'S JUNCTION, LANCASHIRE.

BLAKE'S PATENT STONE BREAKER,
OR ORE CRUSHING MACHINE,
FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.



It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England.
The above section illustrates Blake's Stone Breaker, just as made the last five years and is fully protected in every part by patents.
Extract from Specification:—A short but powerful vibration is imparted to one or both of the jaws by any convenient arrangement, and combination of powerful levers, worked by a crank or eccentric on the main shaft.

LEGAL PROCEEDINGS will be taken at once against any person or persons found making, using, or vending any machine, the construction of which will constitute an infringement on the above patent. Read extracts of testimonials:—
Aldais Works, near Wednesbury.—I at first thought the outlay too much for so simple an article, but now think it money well spent.
Wm. G. ROBERTS
General Fremont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 30 men, or \$75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate.
For circulars and testimonials, apply to—
H. R. MARSDEN, SOHO FOUNDRY,
MEADOW LANE, LEEDS.
Only maker in the United Kingdom.

Kirkless Hall, near Wigan.—Each of my machines breaks from 100 to 120 tons of limestone or ore per day (10 hours), at a saving of 4d. per ton. JOHN LANCASTER.
Oveca, Ireland.—My crusher does its work most satisfactorily. It will break 10 tons of the hardest copper ore stone per hour.
Wm. G. ROBERTS
General Fremont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 30 men, or \$75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate.
For circulars and testimonials, apply to—
H. R. MARSDEN, SOHO FOUNDRY,
MEADOW LANE, LEEDS.
Only maker in the United Kingdom.

NEW MEDICAL GUIDE.
DR. SMITH, who has had twenty years' practical experience in the treatment of Debility, Spermatorrhoea, Disorders of the Nervous System, &c., has published A GUIDE (138 pages) for Self-Cure. Sent to any address on receipt of two stamps. DR. SMITH may be consulted personally (or by letter) in all private and confidential cases.—Address, SMITH and Co., 8, Burton-crescent, Easton-road, London W.C. Consultations daily from Eleven to Five.

THE MINING SHARE LIST

BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Business.	Total divs.	Per Share.	Last paid.
1300	Alderley Edge (cop.), Cheshire [L.]	10 0 0	—	—	11 3 0	0 15 0	Dec. 1884
4000	Bodford United (cop.), Tavistock	2 6 0	—	—	13 11 6	0 2 0	Oct. 1884
1248	Boscawell (tin), Cornwall [L.]	18 0 0	—	—	1 0 0	0 5 0	May 1884
200	Boscawell (tin), Cornwall [L.]	18 0 0	—	—	450 15 0	0 2 0	May 1884
10000	British Silica (cop.), Devon [L.]	4 0 0	—	—	8 per cent.	—	Mar. 1885
1600	British Hematite Iron [L.]	7 0 0	—	—	0 6 0	0 0 0	Nov. 1884
1000	Brynmor (lead), Cardigan [L.]	12 0 0	—	—	6 5 0	0 10 0	Apr. 1885
1200	Bryn Gwyn (lead), Mold [L.]	9 0 0	—	—	280 10 0	0 2 0	June 1884
916	Cargill (silver-lead), Newlyn [L.]	15 7 28	26 28	—	10 15 0	0 15 0	May 1885
1400	Carn Brea (copper), tin, Illogan [L.]	15 0 0	—	—	280 10 0	0 2 0	June 1884
2880	Clifford Amalgamated (cop.), Gwyn [L.]	30 0 0	25 1/2	25 1/2	25 6 0	0 10 0	June 1885
2000	Copper Miners of England [L.]	25 0 0	—	—	7 1/2 per cent.	—	Half-yrly.
40000	Ditto ditto (stock)	100 0 0	—	—	16 18 0	0 1 0	June 1885
887	Gwm Erdd (lead), Cardiganshire [L.]	7 10 0	—	—	283 10 0	0 4 0	Apr. 1885
125	Gwynystwyn (lead), Cardiganshire [L.]	60 0 0	—	—	169 10 0	0 7 10	June 1885
124	Derwent Mines (sil.-lead), Durham [L.]	300 0 0	—	—	291 0 0	0 5 0	June 1885
124	Derwent Mines (sil.-lead), Durham [L.]	300 0 0	—	—	291 0 0	0 5 0	June 1885
358	Dolcoath (copper), Cornwall [L.]	128 17 6	—	—	126 10 0	0 1 0	Nov. 1884
512	East Bassett (cop.), Redruth [L.]	29 10 0	22	—	105 10 0	0 4 0	June 1885
6000	East Carn Brea (copper), Redruth [L.]	3 15 0	6 1/2	6 1/2	0 5 0	0 5 0	June 1885
6144	East Caradon (copper), St. Cleer [S.E.]	2 14 6	12 1/2	—	13 12 0	0 10 0	July 1885
32	East Darren (lead), Cardiganshire [L.]	32 0 0	—	—	105 10 0	0 4 0	June 1885
128	East Pool (tin), copper, Pool, Illogan [L.]	24 0 0	—	—	0 7 0	0 3 0	May 1885
5000	East Rosewarne (cop.), tin, Gwinnar [L.]	3 15 0	3 1/2	3 1/2	67 0 0	0 1 0	May 1885
5000	Foxdale (lead), Isafel, Llanidloes [L.]	25 0 0	—	—	2 7 0	0 10 0	May 1885
5000	Frank Mills (lead), Isafel, Llanidloes [L.]	3 15 0	7 1/2	7 1/2	2 11 0	0 10 0	June 1885
15000	Great Laxey (lead), Isle of Man [L.]	4 0 0	—	—	15 0 0	0 5 0	June 1885
5000	Great Wh. Vor (tin), Helston [S.E.]	40 0 0	32	32 1/2	15 0 0	0 5 0	June 1885
119	Great Work (tin), Gernoe [L.]	100 0 0	—	—	33 5 0	0 15 0	June 1885
1024	Herodstoke (id.), near Liskeard [S.E.]	10 0 0	42	—	483 10 0	0 3 0	Apr. 1885
400	Lisburne (lead), Cardiganshire, Wales [L.]	18 0 0	—	—	1 0 0	0 1 0	Oct. 1884
3000	Masey-Saif (lead) [L.]	20 0 0	—	—	3 2 0	0 2 0	July 1885
9000	Marx Valley (copper), Caradon [L.]	4 10 6	4 1/2	4 1/2	0 8 0	0 2 0	June 1885
3000	Miners Boundary (lead), Wrexham [L.]	1 0 0	—	—	175 3 0	0 5 0	May 1885
1800	Miners Mining Co. [L.] (id.), Wrexham [L.]	25 0 0	—	—	19 10 0	0 16 1	Jan. 1885
20000	Miners Mining Co. of Ireland (cop., lead, coal)	7 0 0	—	—	0 4 0	0 2 0	Apr. 1884
40000	Mundy (iron ore) [L.] (S.E.)	2 15 0	—	—	7 0 0	0 1 0	June 1884
150	Nancy Mines (lead), Montgomery [L.]	20 0 0	—	—	0 13 0	0 2 0	Feb. 1884
5000	New Birch Tor and Vitrifer Co. (tin)	30 0 0	—	—	142 10 0	0 7 10	Apr. 1885
5938	North Trekerby (copper), St. Agnes [L.]	1 0 0	2 1/2	2 1/2	77 8 0	0 1 0	May 1885
302	Parya Mines (copper), Anglesey [L.]	50 0 0	—	—	—	0 2 0	Dec. 1884
1123	Providence (tin), Uny Lelant [S.E.]	10 6 7	33	30 32	483 10 0	0 8 0	May 1885
30	Silver Lake Mining Company [L.]	280 0 0	—	—	0 5 0	0 5 0	May 1884
812	South Caradon (cop.), St. Cleer [S.E.]	1 5 0	—	—	490 10 0	0 10 0	May 1884
4000	St. Day United (tin), Redruth [L.]	14 0 0	—	—	17 1 0	0 10 0	June 1885
940	St. Ives Consols (tin), St. Ives [L.]	8 0 0	—	—	28 0 0	0 8 0	Mar. 1885
6000	Tincroft (cop., tin), Pool, Illogan [S.E.]	9 0 0	17	17 1/2	5 10 0	0 5 0	May 1885
6000	West Bassett (copper), Redruth [L.]	1 10 0	—	—	433 10 0	0 4 0	June 1884
9000	Wh. Vor (tin), Helston [S.E.]	40 0 0	77 1/2	72 1/2	433 10 0	0 4 0	June 1884
254	West Damsel (copper), Gwennap [L.]	38 10 0	—	—	609 10 0	0 1 0	June 1885
612	Wh. Vor (tin), Helston [S.E.]	47 10 0	—	—	296 10 0	0 1 0	May 1884
1024	Wh. Vor (tin), Helston [S.E.]	20 0 0	—	—	15 0 0	0 10 0	Aug. 1884
612	Wh. Vor (tin), Helston [S.E.]	3 10 0	—	—	2 9 0	0 2 0	May 1885
4295	Wh. Vor (tin), Helston [S.E.]	4 6 0	4 1/2	4 1/2	59 17 6	0 10 0	Mar. 1885
1024	Wh. Vor (tin), Helston [S.E.]	8 0 0	—	—	288 5 0	0 4 0	Mar. 1884
100	Wh. Vor (tin), Helston [S.E.]	36 2 6	—	—	243 8 0	0 5 0	Mar. 1884
80	Wh. Vor (tin), Helston [S.E.]	70 0 0	205	197 1/2	201 15 0	0 5 0	June 1885
288	Wh. Vor (tin), Helston [S.E.]	48 10 0	205	197 1/2	42 0 0	0 10 0	June 1885
1040	Wh. Vor (tin), Helston [S.E.]	17 0 0	18 1/2	17 1/2	15 3 0	0 6 0	May 1885
7000	Wicklow (copper) [L.]	2 10 0	—	—	—	—	—

* Dividends paid every two months. † Dividends paid every three months.

BRITISH MINES WITH DIVIDENDS IN ABEYANCE.

Shares.	Mines.	Paid.	Last Pr.	Business.	Total divs.	Per Share.	Last paid.
240	Boscawell (tin), Cornwall [L.]	20 10 0	—	—	26 10 0	0 1 0	Mar. 1884
328	Condurow (cop., tin), Camborne [L.]	76 10 0	90	80 90	8 0 0	0 2 0	June 1882
2450	Cook's Kitchen (copper), Illogan [L.]	18 18 9	9	8 1/2	1 7 0	0 7 0	May 1884
1024	Cop Hill (copper), Redruth [L.]	12 0 0	—	—	2 7 0	0 2 0	Sept. 1882
1068	Craddock Moor (copper), St. Cleer [L.]	8 14 0	—	—	7 12 0	0 4 0	June 1885
4076	Devon and Cornwall (cop.), Tavistock [L.]	6 3 0	—	—	0 10 0	0 2 0	Feb. 1885
12800	Drake Walls (tin), copper, Calstock [L.]	2 1 0	—	—	0 18 0	0 1 6	May 1883
3000	Dyffryn (lead), Wales [L.]	12 6 0	—	—	0 17 0	0 6 0	Jan. 1884
1908	East Wheal Lovell (tin), Wendron [L.]	3 9 0	10	10 10 1/2	1 10 0	0 10 0	May 1884
940	Fowey Consols (copper), Tavyard [L.]	4 11 6	—	—	41 9 0	0 3 0	June 1880
6000	Great South Toluca (copper), Redruth [L.]	0 3 0	2 1/2	1 1/2	7 18 0	0 5 0	Dec. 1881
6240	Gunnite (glitters), Adit (copper)	0 3 0	—	—	0 3 0	0 3 0	Mar. 1882
1600	Levant (copper), tin, St. Just [L.]	2 10 0	—	—	1091 0 0	0 5 0	Mar. 1882
640	Mount Pleasant (lead), Mold [L.]	4 0 0	—	—	18 18 1	0 7 6	Aug. 1882
1000	Orsed (lead), Flintshire [L.]	0 0 0	—	—	0 10 0	0 8 0	Mar. 1882
1772	Pobber (tin), St. Agnes [L.]	15 0 0	—	—	7 19 6	0 10 0	Nov. 1883
512	Pobber (tin), St. Agnes [L.]	8 0 0	—	—	1 0 0	0 1 0	July 1883
6000	Rosewell Hill and Nansom United [L.]	3 6 0	—	—	0 10 0	0 1 0	June 1883
512	South Toluca (cop.), Redruth [L.]	8 0 0	—	—	74 10 0	0 1 0	May 1883
496	S. Wh. Frances (cop.), Illogan [S.E.]	18 18 9	—	—	370 18 6	0 1 0	Nov. 1883
280	Sparre (cop.), tin, St. Just [L.]	9 17 9	—	—	9 18 0	0 1 0	June 1882
872	Trellyn Consols (tin), St. Ives [L.]	11 10 0	—	—	7 0 0	0 10 0	Sept. 1884
1000	Trumpet Consols (tin), near Helston [L.]	11 10 0	—	—	11 0 0	0 2 0	Mar. 1882
4294	Vigra and Clogau (copper) [L.]	5 0 0	—	—	6 2 0	0 1 0	Mar. 1882
1024	West Caradon (cop.), Liskeard [S.E.]	10 0 0	—	—	101 18 0	0 10 0	Oct. 1882
1000	Wheal Bassett and Grylls (tin)	7 0 0	—	—	8 0 0	0 10 0	Oct. 1883
1024	Wheal Killy (tin), Uny Lelant [S.E.]	3 0 0	7 1/2	6 1/2	10 2 0	0 7 6	July 1884
696	Wheal Margaret (tin), Uny Lelant [S.E.]	13 17 8	—	—	76 5 0	0 1 0	May 1885
3044	Wheal Tremayne (tin), Gwinnar [L.]	6 11 3	1 1/2	1 1/2	6 13 0	0 5 0	Nov. 1882
8400	West Fowey Consols (tin and copper)	7 10 0	—	—	0 19 0	0 6 0	Jan. 1882
5000	Wharfedale Mining Company [L.]	0 5 0	—	—	—	—	—

FOREIGN DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Business.	Total divs.	Per Share.	Last paid.
18000	Burra (copper), South Australia [L.]	8 0 0	—	—	320 0 0	0 5 0	Sept. 1884
15000	Capra Copper Mining [L.]	7 0 0	11 1/2	10 1/2	2 2 0	0 16 0	June 1885
13000	Cobre Copper Co. (cop.), Cuba [S.E.]	40 0 0	27	25 27	101 0 0	0 1 0	Jan. 1885
70000	Coburn and Australian [L.]	5 0 0	—	—	1 12 0	0 2 0	Aug. 1884
18000	East Indian Coal, Calcutta [L.]	10 0 0	—	—	7 1/2 per cent.	—	Yearly.
25000	Fortuna (lead), Spain [L.]	2 0 0	3 1/2	3 1/2	0 14 0	0 3 0	Dec. 1884
25000	Gen. Mining Assoc., New South Wales [S.E.]	24 0 0	—	—	21 10 0	0 1 0	June 1884
80000	Kapunda Mining Co., Australia [S.E.]	1 0 0	—	—	6 12 0	0 1 0	June 1884
15000	Linares (lead), Spain [L.]	3 0 0	—	—	11 4 0	0 4 0	June 1885
10000	Lusitania (Portugal) [S.E.]	2 0 0	3 1/2	1 1/2	0 10 0	0 10 0	Aug. 1884
9275	New Wildberg (copper)	2 0 0	—	—	0 10 0	0 10 0	Aug. 1884
50000	Panallio (copper) [L.]	3 0 0	—	—	7 1/2 per cent.	—	Yearly.
10000	Portuguese (sil.-lead), France [S.E.]	30 0 0	—	—	2 3 0	0 16 0	Dec. 1884
97500	Port Phillip (lead), Clunes [S.E.]	1 0 0	1 1/2	1 1/2	0 12 0	0 1 0	July 1884
11000	St. John del Rey [L.]	15 0 0	46	44 46	63 15 0	0 2 10	June 1884
43174	United Mexican (sil.), Mexico [S.E.]	28 8 0	4	3 1/2	2 19 0	0 5 0	Sept. 1884
10000	Vancover (copper) [L.]	1 0 0	—	—	0 15 0	0 5 0	Nov. 1884
80000	Victoria (London) Mining Co. [L.]	1 0 0	—	—	0 7 0	0 5 0	Jan. 1885
40000	West Canada Mining Company [L.]	1 0 0	—	—	0 19 0	0 6 0	May 1885

FOREIGN MINES WITH DIVIDENDS IN ABEYANCE.

Shares.	Mines.	Paid.	Last Pr.	Business.	Total divs.	Per Share.	Last paid.
10000	Alten and Quenangen Unl. (cop.) [L.]	4 10 0	—	—	4 5 0	0 15 0	Nov. 1883
20000	Australian (cop.), S. Australia [S.E.]	7 6 0	—	—	0 10 0	0 10 0	Dec. 1883
6000	Central American (silver) [L.]	8 0 0	—	—	4 6 0	0 14 10	Dec. 1883
10000	Copiapu Mining Company, Chile [S.E.]	16 0 0	—	—	6 18 0	0 10 0	Nov. 1882
100000	Don Pedro No. Del Rey [L.]	0 12 6	—	—	0 0 0	0 9 0	Dec. 1883
108818	Marquette and New Granada [S.E.]	1 0 0	—	—	0 9 0	0 6 0	July 1885
45000	Yadnamutana (cop.), S. A. [L.]	3 0 0	—	—	0 5 0	0 5 0	Aug. 1883

NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Paid.	Last Pr.	Buss.dons.	Last Call.		
35000	Alamillos (lead), Spain [L. £2] [S.E.]	1 10 0	—	1 1/2	1 1/2	Apr. 1885	
100000	Anglo-Brazilian (gold) [L. £1] [S.E.]	0 0 0	—	—	—	Dec. 1883	
30000	Beattie Tin Stream (copper), Mexico [L. £1]	0 17 0	—	—	—	Oct. 1883	
25000	Capila (silver), Mexico [L. £2] [S.E.]	1 5 0	—	—	—	Feb. 1884	
10000	Copiapu Smelting [L.], Chili	10 0 0	—	1 1/2	1 1/2	Feb. 1884	
75000	Don Mountain (copper), New Zealand [L.] [S.E.]	1 0 0	—	—	—	Fully paid.	
50000	East del Rey (gold), Brazil [L. £2] [S.E.]	2 5 0	—	1 1 1/2	—	Apr. 1885	
18000	El Chico Silver Mining and Reduction Company [L. £5]	3 0 0	—	—	—	—	
8000	English and Canadian Mining Company [L.]	5 0 0	—	—	—	Fully paid.	
40000	Fortune (copper), West Australia [L.]	2 0 0	—	—	—	Fully paid.	
50000	Frontino and Bolivia (gold), New Granada [L. £2] [S.E.]	1 0 0	—	2 1/2	1 1/2	2 1/2	Mar. 1885
10000	Gonnesa (lead) [L.] (5000 paid, 5000 £1000 paid)	1 0 0	—	—	—	—	May, 1885
80000	Great Northern (copper), South Australia [L.] [S.E.]	1 10 0	—	—	—	—	June, 1882
10000	Great Barrier Land, Mining, &c., New Zealand [L.]	5 0 0	—	—	—	—	Fully paid.
24000	Hindostan (copper), Bengal [L. £5]	3 0 0	—	—	—	—	Feb. 1883
4000	Hope Silver-Lead and Copper Mining Co. [L.], Jamaica	25 0 0	—	—	—	—	Fully paid.
80000	Lagunazo (sulphur, copper), Portugal [L.]	1 0 0	—	—	—	—	Fully paid.
10000	Montes Azules (gold), Brazil [L.] [S.E.]	2 0 0	—	3/4	1 1/2	3/4	Fully paid.
50000	Quebrada Coal and Iron [L.] (5000 £5000						